Note remarks

: MB 2,5 H3 : 15.04.91 Test sheet Edition : 17.02.89 Replaces Test oil : ISO-4113

Combination no. : 0 400 075 951

Injection pump

Pump designation : PES5M55C32ORS170 EP type number : 0 410 055 977

Governor

Governor design. : RSF340/2300M60-20

: 0 420 021 111 Governer no.

Customer-spec. information : MB-PKW Customer

Engine : 0M602-EC5

1st version kW : 66.0

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 469 990 351

Inlet press., bar: 1.00

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.00...2.10

: (1.95...2.15) Rack travel in mm : 20.00...22.00

Firing order : 1-2-4-5-3 Phasing : 0-72-144-216-238

Tolerance  $+ - ^{\circ} : 0.00 (1.00)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 3.2...3.3

100 s: (3.1...3.4)

Spread cm3 : 0.2

100 s: (0.3)

2nd speed rpm : 315.0 Rack travel in mm : 6.5...6.7

Del.quantity cm3/: 0.5...0.6 100 s: (0.4...0.9)

Spread cm3 : 0.1

100 s: (0.1)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1100

Del.quantity : 32.0...34.0)

: 2.50 Spread cm3

1000 : (3.00)

RATED SPEED

1st version

Control lever

position degrees: 50...0 3rd rack travel in: 8,5...8,9 Speed rpm : 2500

4th rack travel in: 2950

: 0.00...1.60 Speed rpm

SET IDLE CONTROL LEVER

POSITION

rpm

Rack travel in mm: 1,2...1,3

LOW IDLE 1

Control lever

position degrees: 12...16

Setting point w/out bumper spring

Speed rpm : 315 cm3 : 2.50Spread Rack travel in mm: 6.6 1000 s: (3.00) Testina: Speed : 220 STARTING FUEL DELIVERY rom Minimum rack trave: 9.50 : 315 rpm Rack travel in mm : 6.50...6.70 : 100 Speed rpm Del.quantity cm3/: 52.0...0.0 1000 s: (52.0...0.0) Rack travel in mm : 2.00 : 660...760 Speed rpm Rack travel in mm : 20.10...0.00 Speed : 1000 rpm Maximum rack trave: 1.30 HIGH IDLE SET IDLE AUXILIARY SPRING Speed rpm : 380 1st version Rack travel in mm : 5,4...5,6 : (5,3...5,7) Aneroid pressure h: 1100 Speed rpm : 2500 Rack travel in mm : 8.50...8.90 Del.quantity cm3/: 22.0...26.0 1000 s: (21.0...27.0) TORQUE CONTROL Torque control curve - 1st version rpm : 1000 1st speed Spread cm3 : 2.50Rack travel in m: 12.30...12.40 1000 s: (3.00) rpm : 1800 2nd speed Rack travel in m: 11.70...11.90 LOW IDLE : ∠200 3rd speed rpm Rack travel in m: 11.40...11.60 Speed rpm : 315 Rack travel in mm : 6.50...6.70 Aneroid/Altitude Del.quantity cm3/: 5.0...6.0 1000 s: (4.5...9.0) Compensator Test Spread cm3 : 1.001000 s: (1.50) 1st version Setting SETTING/TESTING ELECTRONIC IDLE Speed : 1000 REGULATION (ELR) rpm hPa : 950 Pressure Rack travel mm : 0.00...0.20 Control lever at idle stop Speed rpm : 340 Rack travel in mm : (12,4...13,8) Measurement Del.quantity cm3/: -1000 s: (28,0...36,0) 1/min: 1000 Speed 1st pressure hPa : 900 Current A : 1,8 Control lever at full-load stop Rack travel in m: 0.50...0.70 : 2950 2nd pressure hPa : 750 Speed rpm Rack travel in m: 1.80...2.20 Rack travel in mm : 0,0...1,0 Current FUEL DELIVERY CHARACTERISTICS short-duration A: 3,0 Starting test rpm : 100 Del.quantity cm3/: -min. 1000 s: 52,0 / 1,8A 1st version Aneroid pressure h: 1100 Speed : 1800 rpm Del.quantity cm3/: 34.0...35.5 Remarks: 1000 s: (33.0...36.5) cm3 : 2.50 Pin projection = 16.60...16.70 mm Spread 1000 s: (3.0) Aneroid pressure h: 1100 Speed : 2200 Sliding sleeve pre-travel = 6.5 mm rom Del.quantity cm3/: 34.0...36.0 1000 s: (33.0...37.0) CHECKING THE IDLE-SPEED AUXILIARY SPRING CUTOFF

-Control-lever position 49°, max.

0.2 mm control-rod travel deduction allowable after switchover point (of starting cam) up to 1000 1/min. Control-lever position 46.5°, control-rod travel deduction must be greater than 0.2 mm after switchover point (of starting cam).

TESTING PNEUMATIC SHUTOFF DEVICE
-Control lever at idle stop.
With n = 315 1/min. and pu = 450 mbar,
control rod must move quickly to
control-rod travel = 0 mm

Start-of-delivery sensor system: adjustment and blocking with device KDEP 1077 = 19.3°...19.7° (19.2...19.8°) angular displacement of cam following start of delivery of cylinder no. 1. Difference in start of delivery between max. and min. value = max. 1° angular displacement of cam

Note remarks

: DAF 8,3 i 6 Test sheet Edition : 28.03.91

: 29.5.90 Replaces Test oil : ISO-4113

Combination no. : 0 400 676 182

Injection pump

Pump designation : PE6A90D410RS2524 EP type number : 0 410 696 179

Governor

Governor design. : RSV250...750A7C2201L

Governer no. : 0 420 232 444

Customer-spec. information Customer : DAF

: DH 825 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.30...2.40

: (2.25...2.45)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-Firing order

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00

Difference \* CS : 4.50...5.50

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 9.70...9.80

Del.quantity cm3/: 8.3...8.4

100 s: (8.1...8.6)

cm3 : 0.3Spread

100 s: (0.5)

rpm : 250.0 2nd speed

Rack travel in mm: 6.0...6.2 Del.quantity cm3/: 0.7...1.3

100 s: (0.5...1.5)

cm3 : 0.2Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 17pm : 800

Speed Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Del.quantity : 83.0...84.0

1000 : (81.0...86.0)

: 3.00 Spread cm3

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 91...99

Testina:

1st rack travel in: 8.70

rpm : 750...755 Speed 2nd rack travel in: 4.00 rpm : 780...795 Speed 4th rack travel in: 950 Speed rpm : 0.30...1.40 LOW IDLE 1 Control Lever position degrees: 56...74 Setting point w/out bumper spring Speed rpm: 250
Rack travel in mm: 6.1
Speed rpm: 250
Rack travel in mm: 6.00...6.20
Rack travel in mm: 2.00
Speed rpm: 250...310 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.70 Speed rpm : 750...755 STARTING FUEL DELIVERY Speed : 100 rpm Rack travel in mm : 19.50...21.00 LOW IDLE Speed rpm : 250
Rack travel in mm : 6.00...6.20
Del.quantity cm3/ : 7.0...13.0
1000 s: (5.0...15.0) cm3 : 2.50 1000 s: (4.50) Spread Remarks: APPLICATION

Generator

#### Note remarks

Test sheet : KHD 6,1 t
Edition : 19.03.57
Replaces : 28.11.88
Test oil : ISO-4113

Combination no. : 0 400 835 037

Injection pump

Pump designation : PES6A85D41J/3RS2761 EP type number : 0 410 886 895

Governor

Governor design. : RQ300...1250AB935DL

Governer no. : 0 420 202 267

Customer spec. information Customer : KHD

Engine : BF6 L 913T

1st version kW : 96.0 Rated speed : 2500

# TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

**Opening** 

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60 : (2.45...2.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 7.0...7.1

100 s: (6.8...7.3)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 300.0 Rack travel in mm : 7.6...7.8 Del.quantity cm3/ : 0.8...1.4

100 s: (0.6...1.6)

Spread cm3 : 0.2 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250

Del.quantity : 70.5...71.5 1000 : (68.5...73.5)

Spread cm3 : 3.00

1000 : (5.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 750 Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.70

Speed rpm : 1295...1310

2nd rack travel in: 4.00

Speed rpm : 1355...1385

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Speed Rack travel in mm: 6.6 Testing: Speed : 100 rpm Minimum rack trave: 8.00 Speed : 300 rpm Rack travel in mm : 6.50...6.70 Rack travel in mm : 2.00 Speed : 530...570 rpm TORQUE CONTROL Dimension a mm : 0.45 Torque control curve - 1st version 1st speed rpm : 1250
Rack travel in m: 10.70...10.80
2nd speed rpm : 750 Rack travel in m: 11.70...11.90 3rd speed rpm : 910 Rack travel in m: 11.60...11.80 4th speed rpm : 1030 Rack travel in m: 11.10...11.30 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 800
Del.quantity cm3/ : 66.5...69.5 1000 s: (64.0...72.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.70 rpm : 1295...1310 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 110.0...120.0 1000 s: (107.0...123.0) Rack travel in mm : 17.00...17.40 Remarks:

### ilote remarks

Test sheet : MB 4,0 i : 19.03.91 Edition : 1.2.91 Replaces Test oil : ISO-4113

Combination no. : 0 400 844 095

Injection pump

Pump designation: PES4A950410RS2809 EP type number : 0 410 894 993

Governor

: RQV300...14COAB1065-Governor design.

: 0 420 212 227 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: OM 364 Engine

: 65.0 1st version kW : 2800 Rated speed

### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2

: 0-90-180-270 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 9.90...10.00

Del.quantity cm3/: 5.8...6.0

100 s: (5.6...6.2)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 9.1...9.3

Del.quantity cm3/: 0.8...1.2

100 s: (0.5...1.4)

cm3 : 0.3Spread 100 s: (0.5)

## (B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 0.80...1.30 travel mm

2nd speed rpm : 500

travel mm : 2.30...2.80 : 750 3rd speed

rpm : 4.10...4.30 travei mm

4th speed : 1500 rpm

travel mm : 8.50...8.60

# GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1450

Rack travel in mm : 15.20...17.80

# FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

: 58.0...60.0 Del.quantity 1000 : (56.0...62.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 111...119

Testing:

1st rack travel in: 8.90

rpm : 1450...1460 Speed

2nd rack travel in: 4.00

rpm : 1535...1565 Speed

4th rack travel in: 1670

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 73...81

Testing:

Speed rpm : 100 Minimum rack trave: 10.50 rpm : 300 Speed

Rack travel in mm : 9.10...9.30

CONSTANT REGULATION

Speed rpm : 500...650

TORQUE CONTROL

Dimension a mm : 1.50

Torque control curve - 1st version

1st speed rpm : 1400 Rack travel in m: 9.90...10.00

2nd speed

nd speed rpm : 400 Rack travel in m: 11.40...11.70

3rd speed

d speed rpm : 650 Rack travel in m: 10.90...11.10

4th speed rpm : 900

Rack travel in m: 10.40...10.70

START CUT-OUT

Speed 1/min: 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 400

Del.quantity cm3/: 48.0...51.0 1000 s: (45.5...53.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 8.90

rpm : 1450...1460 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0)

Rack travel in mm : 14.80...15.20

Remarks:

Set shutoff stop to contact at 3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 4,0 j 1 : 19.03.91 Test sheet Edition : 1.2.90 Replaces Test oil : ISO-4113 Combination no. : 0 400 844 096 Injection pump Pump designation : PES4A950410k52809 EP type number : C 410 894 993 Governor : RQV300...1400AB1065-Governor design. 23L : 0 420 212 227 Governer no. Customer spec. information : MERCEDES-BENZ Customer : OM 364 Engine 1st version kW : 65.0 : 2800 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 000 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening : 172...175 pressure, bar Test lines **: 1 680 75**0 015 Outside diameter x Wall thickness : 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 3.20...3.30 : (3.15...3.35) Prestroke mm

Rack travel in mm : 9.00...12.00 : 1-3-4-2 Firing order

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 9.90...10.00

Del.quantity cm3/: 5.8...6.0

100 s: (5.6...6.2)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 9.1...9.3 Del.quantity cm3/: 0.8...1.2 100 s: (0.5...1.4)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed 300 rom : : 0.80...1.30 travel mm

2nd speed : 500 rpm travel mm : 2.30...2.80

3rd speed : 750 rpm

: 4.10...4.30 travel mm

: 1500 4th speed man

: 8.50...8.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 Speed rpm : 1450 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

Del.quantity : 58.0...60.0 1000 : (56.0...62.0)

: 3.50 cm3 Spread 1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 111...119

Testing:

1st rack travel in: 8.90

rpm : 1450...1460 Speed

2nd rack travel in: 4.00

rpm : 1535...1565 Speed

4th rack travel in: 1670

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 73...81

Testing:

Speed : 100 rpm Minimum rack trave: 10.50 rpm : 300 Speed

Rack travel in mm : 9.10...9.30

CONSTANT REGULATION

rpm : 500...650 Speed

TORQUE CONTROL

Dimension a mm : 1.50

Torque control curve - 1st version

1st speed rpm : 1400 Rack travel in m: 9.90...10.00

2nd speed rpm : 400

Rack travel in m: 11.40...11.70

3rd speed rom : 650

Rack travel in m: 10.90...11.10

4th speed rpm : 900

Rack travel in m: 10.40...10.70

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 400 Speed

Del.quantity cm3/: 48.0...51.0 1000 s: (45.5...53.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 8.90

rpm : 1450...1460 Speed

STARTING FUEL DELIVERY

Remarks:

Set shutoff stop to contact at 3.0...3.5 mm control-rod travel.

#### Note remarks

Test sheet : DAF 6,2 p 4
Edition : 19.03.91
Replaces : 1.2.91
Test oil : ISO-4113

Combination no. : 0 400 846 585

Injection pump

Pump designation : PES6A95D32ORS2693 EP type number : 0 410 896 914

Governor

Governor design. : RQ300/1300AB1253-1R

Governer no. : 0 420 201 650

Customer—spec. information Customer : DAF

Engine: NS 133

### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10 : (1.95...2.15)

Rack travel in mm : 7.50...10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - \* : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 7.6...7.7

100 s: (7.4...7.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0
Rack travel in mm : 6.7...6.9
Del.quantity cm3/: 0.7...1.1
100 s: (0.4...1.3)
Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 Speed rpm: 800

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850 Aneroid pressure h: 700

Del.quantity : 76.5...77.5 1000 : (74.5...79.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Setting point: Speed rpm : 800 Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.50

rpm : 1340...1350 Speed 2nd rack travel in: 4.00 Speed rpm : 1410...1440 4th rack travel in: 1550 Speed rom : 0.00...1.00LOW IDLE 1

Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.8

Testing: Speed rpm : 100 Minimum rack trave: 8.20 rpm : 300

Rack travel in mm : 6.70...6.90 Rack travel in mm: 2.00

rom : 540...580 Speed

TORQUE CONTROL Dimension a mm : 0.55 Torque control curve - 1st version 1st speed rpm : 1290 Rack travel in m: 10.50...10.60 : 800

2nd speed rpm Rack travel in m: 11.80...12.40 3rd speed rpm : 950

Rack travel in m: 11.20...11.80

4th speed rpm : 1050 Rack travel in m: 10.70...11.10

Aneroid/Altitude Compensator Test

1st version Setting : 600 Speed rom Pressure hPa : 700

Rack travel mm : 11.50...11.60

Measurement 1/min: 600 Speed

1st pressure hPa : -Rack travel in m: 10.10...10.30

2nd pressure hPa : 160

Rack travel in m: 10.70...10.80

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 700 Speed

rpm : 1290

Del.quantity cm3/: 73.0...75.0 1000 s: (70.5...77.5) Aneroid pressure h: -

Speed rpm : 600 Del.quantity cm3/: 50.5...51.5 1000 s: (48.5...53.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 9.50 rpm : 1340...1350 Speed

LOW IDLE

Speed rpm : 300 Rack travel in mm : 6.70...6.90 Del.quantity cm3/ : 7.0...11.0 1000 s: (4.5...13.5) Spread

cm3 : 3.501000 s: (5.50)

.

Remarks:

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : RAB 9,7 e Edition : 22.03.91 Replaces : 14.12.90 Test oil : ISO-4113 Combination no. : 0 400 846 588 Injection pump Pump designation : PES6A95D420LS2804 EP type number : 0 410 896 899 Governor Governor design. : RQ200/1050AB1246-1R Coverner no. : 0 420 201 652 Customer-spec, information Customer : RABA : D2156 HMS UT Engine 1st version kW : 162.0 Rated speed : 2100 TEST BENCH REQUIREMENTS Test oil : 38...42 inlet temp. °C Overflow valve : 1 417 413 000 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 Opening | pressure, bar : 172...175 Test Lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00X2.00X600 (A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 1.80...1.90 : (1.75...1.95) Rack travel in mm : 9.00...12.00 A14

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ Time to cyl. no. : 1 BASIC SETTING 1st speed rom : 1050Rack travel in mm : 12.00...12.10 Del.quantity cm3/: 11.9...12.1 100 s: (11.7...12.3) Spread cm3 : 0.3100 s: (0.6) rpm : 200.02nd speed Rack travel in mm: 7.2...7.4 Del.quantity cm3/: 1.1...1.5 100 s: (0.8...1.7) cm3 : 0.3Spread 100 s: (0.5) GUIDE SLEEVE POSITION Control-lever position Degree: -2 rpm : 500 Rack travel in mm : 19.20...20.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1050 Aneroid pressure h: 700 Del.quantity : 779.0...123.0) : 3.50 1000 : (6.00) RATED SPEED 1st version Setting point: Speed rpm Rack travel in mm: 20.0 Testing: 1st rack travel in: 11.00 rpm : 1095...1110 Speed 2nd rack travel in: 4.00 Speed rpm: 1125...1155

LOW IDLE 1

Setting point w/out bumper spring

rpm : 200 Speed Rack travel in mm: 6.5

Testing:

Speed rpm : 100 Minimum rack trave: 8.00 Speed rpm : 200

Rack travel in mm : 6.40...6.60

Rack travel in mm: 2.00 Speed : 300...340 rom

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version

1st speed rpm : 1050

Rack travel in m: 12.00...12.10

rpm : 415 2nd speed

Rack travel in m: 13.20...13.30

3rd speed rpm : 680

Rack travel in m: 12.80...13.00

rpm : 835 4th speed

Rack travel in m: 12.20...12.40

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed rom hPa : 700 Pressure

Rack travel mm : 12.70...12.80

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.70...10.80
2nd pressure hPa : 260
Rack travel in m: 12.50...12.60
3rd pressure hPa : 180
Rack travel in m: 11.10...11.40

START CUT-OUT

1/min: 140 (160) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 600 Del.quantity cm3/: 113.0...116.0 1000 s: (110.5...118.5)

Aneroid pressure h: -

rpm : 500 Speed

Dei.quantity cm3/: 74.0...76.0 1000 s: (72.0...78.0)

RACK STOP ADJUSTMENT

Speed rpm : 500

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.00

rpm : 1095...1110 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 150.0...160.0 1000 s: (147.0...163.0)

Rack travel in mm : 17.50...17.70

Remarks:

Set idle stop at 200 min -1 to a control-rod travel of 6.5 mm

**APPLICATION** 

**Omnibus** 

Note remarks

: MB 6,0 j 4 : 19.03.91 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 846 591

Injection pump

Pump designation : PES6A95D41DRS2797 : 0 410 896 900 EP type number

Governor

: RQV300...1400AB1065-Governor design.

22L

: 0 420 212 226 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M 366 Engine

1st version kW : 97.0 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.20...3.30 Prestroke mm

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1400 1st speed

Rack travel in mm : 9.90...10.00

Del.quantity cm3/: 5.8...6.0

100 s: (5.6...6.2)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 9.0...9.2 Del.quantity cm3/: 0.8...1.2

100 s: (0.5...1.4)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.80...1.30

: 500 2nd speed rpm

: 2.30...2.80 travel mm : 750

3rd speed rpm

: 4.10...4.30 travel mm

1500 4th speed rpm

: 8.50...8.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1450 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

: 58.0...60.0 Del.quantity

1000 : (56.0...62.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 109...117

Testina:

1st rack travel in: 8.90

rpm : 1450...1460 Speed

2nd rack travel in: 4.00

Speed rpm : 1545...1575 4th rack travel in: 1670 Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 71...79

Testing:

Speed rpm : 100 Minimum rack trave: 10.50 : 300 rpm

Rack travel in mm : 9.00...9.20

CONSTANT REGULATION

rpm : 500...650 Speed

TORQUE CONTROL

Dimension a mm : 1.40

Torque control curve - 1st version

rpm : 1400 1st speed

Rack travel in m: 9.90...10.00

rpm : 400 2nd speed

Rack travel in m: 11.30...11.60

3rd speed rpm : 650

Rack travel in m: 10.90...11.10

4th speed rpm : 900 Rack travel in m: 10.40...10.70

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 400

Del.quantity cm3/: 48.0...51.0 1000 s: (45.5...53.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 8.90

rpm : 1450...1460 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0)

Rack travel in mm : 14.60...15.00

Remarks:

Set shutoff stop to contact at 3.0...3.5 mm control-rod travel.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

Test sheet

: KHD 4,1 k 1 : 22.03.91

Edition Replaces

Test oil

: ISO-4113

Combination no. : 0 400 864 088

Injection pump

Pump designation : PES4A850410/3RS2799 : 0 410 884 944

EP type number Governor

Governor design.

: RSV325...1250A2C2253

-2L

Governer no.

: 0 420 232 556

Customer-spec. information Customer : KHD

Engine : BF4L913

1st version kW : 78.0 : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar : 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 8.7...8.8

100 s: (8.5...9.0)

cm3 : 0.3Spread

100 s: (0.5)

2nd speed rpm : 400.0 Rack travel in mm : 7.8...8.0 Del.quantity cm3/ : 1.2...1.8

100 s: (1.0...2.0) Spread cm3 : 0.2

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1250 Aneroid pressure h: 700

Del.quantity : 87.5...88.5 1000 : (85.5...90.5)

cm3 : 3.00 Spread 1000 : (5.00)

RATED SPEED

1st version Control lever

position degrees: 95...103

Testing:

1st rack travel in: 11.40

Speed rpm : 1295...1305

2nd rack travel in: 4.00

rom : 1345...1375 Speed

3rd rack travel in: 4.00 rpm : 1375...1405 Speed

4th rack travel in: 1540 rom : 0.30...1.70Speed

LOW IDLE 1 Control lever

position degrees: 67...75 Setting point w/out bumper spring

: 400 rpm Rack travel in mm: 5.5

Testing:

Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 400
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 595...655

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1250 1st speed

Rack travel in m: 12.40...12.50

2nd speed rpm : 500

Rack travel in m: 13.10...13.20

3rd speed rpm : 900

Rack travel in m: 12.80...13.10 4th speed rpm : 1000 Rack travel in m: 12.60...12.80

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rom hPa : 700 Pressure

Rack travel mm : 13.10...13.20

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.60...11.70

2nd pressure hPa : 390
Rack travel in m: 12.50...12.60
3rd pressure hPa : 280
Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 rpm : 750 Speed

Del.quantity cm3/: 88.5...90.5 1000 s: (86.0...93.0)

Ameroid pressure h: -

Speed rpm : 500

Del.quantity cm3/: 62.0...64.0

1000 s: (60.0...66.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.40

Speed rpm : 1295...1305

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 115.0...125.0 1000 s: (112.0...128.0)

Rack travel in mm : 17.60...18.00

Remarks:

**APPLICATION** 

Compressor

Note remarks

: KHD 4,1 k 2 : 19.03.91 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 864 089

Injection pump

Pump designation: PES4A850410/3RS2799

: 0 410 884 944 EP type number

Governor

Governor design. : RSV325...1075A8C2253

-3L

: 0 420 232 547 Governer no.

Customer-spec. information Customer : KHD

Engine : BF4L913

1st version kW : 70.0 : 2150 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. Values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.50...2.60 Prestroke mm

: (2.45...2.65)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1075

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 7.9...8.0

100 s: (7.7...8.2)

cm3 : 0.3Spread

100 s: (0.5)

rpm : 325.0 2nd speed Rack travel in mm: 8.2...8.4

Del.quantity cm3/: 1.2...1.8

100 s: (1.0...2.0) cm3 : 0.2Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1075 Aneroid pressure h: 1000

Del.quantity : 79.5...80.5 1000 : (77.5...82.5)

: 3.00 Spread cm3

1000 : (5,00)

RATED SPEED

1st version Control lever

position degrees: 95...103

Testing:

1st rack travel in: 10.90

rpm : 1115...1125 Speed

2nd rack travel in: 4.00

rpm : 1150...1180 Speed

4th rack travel in: 1315 rpm : 0.30...1.70 Speed LOW IDLE 1 Control Lever position degrees: 64...72 Setting point w/out bumper spring rpm Rack travel in mm: 8.3 Testina: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 325 Speed Rack travel in mm : 8.20...8.40 Rack travel in mm : 2.00 : 350...410 Speed CDM TORQUE CONTROL Torque control curve - 1st version rpm : 1075 1st speed Rack travel in m: 11.90...12.00 rpm : 500 2nd speed Rack travel in m: 12.40...12.50 4th speed rpm : 860 Rack travel in m: 12.20...12.40 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 1000 Pressure : 12.40...12.50 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 11.40...11.50 2nd pressure hPa : 330 Rack travel in m: 12.00...12.10 3rd pressure hPa : 250 Rack travel in m: 11.60...11.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm: 750
Del.quantity cm3/: 79.5...81.5
1000 s: (77.0...84.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.90

Speed rpm : 1115...1125

STARTING FUEL DELIVERY

Speed rpm: 100

Del.quantity cm3/: 115.0...125.0 1000 s: (112.0...128.0)

Rack travel in mm : 18.00...18.40

Remarks:

A21

Aneroid pressure h: -

Speed rpm: 500 Del.quantity cm3/: 57.0...59.0

1000 s: (55.0...61.0)

Note remarks

Test sheet : KHD 4,1 i 2 Edition : 19.03.91 Replaces : 1.3.91

: ISO-4113 Test oil

Combination no. : 0 400 864 090

Injection pump

Pump designation : PES4A85D410/3RS2781

EP type number : 0 410 884 945

Governor

Governor design. : RS325/1250A0C2087-1L

: 0 420 220 012 Governer no.

Customer-spec. information Customer : KHD

Engine : F4L912F

1st version kW : 54.0 : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening 1

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm

: (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasina : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1235

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 6.4...6.5

100 s: (6.2...6.7)

cm3 : 0.3Spread

100 s: (0.5)

rpm : 325.0 2nd speed Rack travel in mm: 7.9...8.1 Del.quantity cm3/: 1.0...1.6

100 s: (0.8...1.8)

cm3 : 0.3Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1235

Del.quantity : 64.0...65.0 1000 : (62.0...67.0)

Spread : 3.00 cm3

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Testing:

1st rack travel in: 10.40

rpm : 1275...1285 Speed

2nd rack travel in: 4.00

rpm : 1330...1360 Speed

4th rack travel in: 1490

Speed rpm : 0.30...1.40

LOW IDLE 1 Setting point w/out bumper spring rpm : 325 Rack travel in mm: 6.0 Testina: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 325 Speed Rack travel in mm : 5.90...6.10 Rack travel in mm : 2.00 rpm : 1260...132 Speed TORQUE CONTROL Dimension a mm : 0.20 Torque control curve - 1st version rpm : 1235 1st speed Rack travel in m: 11.30...11.40 rpm : 500 2nd speed Rack travel in m: 11.40...11.60 4th speed rpm : 1000 Rack travel in m: 11.30...11.50 5th speed rpm : 360 Rack travel in m: 13.00...13.60 FUEL DELIVERY CHARACTERISTICS 1st version : 750 Speed rpm Del.quantity cm3/: 55.0...57.0 1000 s: (52.5...59.5) Speed rpm : 1000 Del.quantity cm3/: 62.0...64.0 1000 s: (59.5...66.5) BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.40

Speed rpm : 1275...1285

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 110.0...120.0 1000 s: (107.0...123.0)

Rack travel in mm : 19.50...21.00

Remarks:

Note remarks

: CUM 8,3 a68 : 10.04.91 Test sheet **Edition** : 1.2.90 Replaces Test oil : ISO-4113

Combination no. : 0 400 866 145

Injection pump

Pump designation : PES6A100D320/3RS2691 EP type number : 9 410 230 025

Governor

: RSV400...1100A0c2190 Governor design.

-35R

: 0 420 233 242 Governer no.

Customer-spec. information Customer : C.D.C.

: 6 C 8.3 ltr. Engine

1st version kW : 112.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 017 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 10.5...10.7

100 s: (10.3...10.9)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0

Rack travel in mm : 5.5...5.7 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.2)

cm3 : 0.6Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x:?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1100 Speed

: 105.5...107.5 Del.quantity

1000 : (103.5...109.5) cm3 : 4.00

Spread

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 10.30

Speed rpm : 1140...1150

2nd rack travel in: 4.00

Speed rpm : 1195...1225

3rd rack travel in: 4.00

Speed rpm : 1200...1230

4th rack travel in: 1250

Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever

position degrees: 23...31

Setting point w/out bumper spring

Speed rpm : 400 Rack travel in mm : 5.1

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 400

Rack travel in mm : 5.50...5.70

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.30

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 160

Del.quantity cm3/: 135.0...155.0

1000 s: (130.0...160.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm: 400

Rack travel in mm : 5.50...5.70 Del.quantity cm3/ : 16.0...20.0

1000 s: (13.5...22.5)

Spread cm3 : 6.00

1000 s: (8.00)

Remarks:

: C.D.C. # 3915955

Start-of-delivery mark 11° cam angle

after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm

before stop.

Note remarks

Test sheet : CUM 8,3 p
Edition : 10.04.91
Replaces : 5.10.90
Test oil : ISO-4113

Combination no. : 0 400 866 153

Injection pump

Pump designation : PES6A100D320/3RS2763 EP type number : 0 410 806 006

Governor

Governor design. : RSV400...950A0C2238-

1R

Governer no. : 0 420 233 255

Customer—spec. information Customer : C.D.C.

Engine : 6CT 8.3

1st version kW : 145.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

**Opening** 

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 950

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 12.7...12.9

100 s: (12.6...13.1)

Spread cm3: 0.4

100 s: (0.6)

2nd speed rpm : 400.0 Rack travel in mm : 6.8...7.0 Del.quantity cm3/: 3.1...3.5

100 s: (2.9...3.7)

Spread cm3 : 0.6 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 950 Aneroid pressure h: 900

Del.quantity : 127.0...129.0 1000 : (126.0...131.0)

Spread cm3 : 4.00

1000 : (6.50)

RATED SPEED

1st version Control lever

position degrees: 36...44

Testing:

1st rack travel in: 11.40

rpm : 990...1000 Speed

2nd rack travel in: 4.00

: 1055...1065 Speed rpm

3rd rack travel in: 4.00

Speed rpm: 1065...1095 4th rack travel in: 1150

rpm : 0.30...1.40 Speed

LOW J.DLE 1

Control lever

position degrees: 17...25

Setting point w/out bumper spring

rpm : 400

Rack travel in mm: 6.4

Testing:

: 100 Speed COM

Minimum rack trave: 19.00

rpm : 400

Rack travel in mm : 6.80...7.00

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 500 rpm

hPa : 900 Pressure Rack travel mm : 12.40...12.50

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.60...10.80

2nd pressure hPa : 220

Rack travel in m: 11.10...11.20

3rd pressure hPa : 340

Rack travel in m: 11.90...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/: 89.5...93.5
1000 s: (87.5...95.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.40

rpm : 990...1000 Speed

A27

# STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 150.0...170.0

1000 s: (145.0...175.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

rpm : 400

Rack travel in mm : 6.80...7.00

Del.quantity cm3/: 31.5...35.5 1000 s: (29.5...37.5)

cm3 : 6.00Spread

1000 s: (8.00)

Remarks:

: C.D.C. # 3917577

Adjust stop lever to 0.5...1.0 mm

before stop.

Start-of-delivery mark at 10° cam rotation angle after start of delivery,

cylinder 1

Note remarks

Test sheet : CUM 8,3 a77 Edition : 10.04.91

Replaces : 8.6.90 : ISO-4113 Test oil

Combination no. : 0 400 866 160

Injection pump

Pump designation : PES6A1000320/3RS2691

EP type number : 9 410 230 025

Governor

: RSV470...1100A0c2190 Governor design.

-48R

: 0 420 233 262 Governer no.

Customer-spec. information Customer : C.D.C.

Engine : 6CT830

1st version kW : 150.6 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

**Opening** 

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 10.50

: 1-5- 3- 6- 2- 4 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 11.5...11.7

100 s: (11.3...11.9)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 470.0 Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 1.6...2.0

100 s: (1.4...2.3) Spread cm3 : 0.6

100 s: (0.8)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm: : 1100 Speed

: 115.0...117.0 Dei.quantity 1000 : (113.0...119.0)

cm3 : 4.00

Spread 1000 : (6.50)

RATED SPEED

1st version

Control Lever

position degrees: 48...56

Testing:

1st rack travel in: 11.10

rpm : 1160...1170 Speed

2nd rack travel in: 4.00

: 1235...1245 Speed CDM

3rd rack travel in: 4.00

: 1235...1265 Speed FDM

4th rack travel in: 1325

Speed rpm : 0.30...1.40

LOW IDLE 1 Control Lever

position degrees: 26...34

Setting point w/out bumper spring

rpm : 470 Rack travel in mm: 5.3

Testing:

Speed LDW

Minimum rack trave: 19.00 rpm : 470

Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 12.10...12.20

2nd speed rpm : 750

Rack travel in m: 13.00...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed L DW

Del.quantity cm3/: 128.0...132.0

1000 s: (126.0...134.0)

**DREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.10

Speed

rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm: 20.00...21.00

LOW IDLE

Speed rpm : 470

Rack travel in mm : 5.70...5.90

Del.quantity cm3/: 16.5...20.5 1000 s: (14.0...23.0)

Spread

cm3 : 6.00

1000 s: (8.00)

Remarks:

: C.D.C. # 3917962

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Adjust stop lever to 0.5...1.0 mm before stop.

B01

# Note remarks

: VAL 3,3 b : 19.03.91 Test sheet Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 873 040

Injection pump

Pump designation : PES3A95D32ORS2810 : 0 410 893 997

EP type number

Governor

Governor design. : RSV375...1175A2C2178

-10R

: 0 420 233 281 Governer no.

Customer-spec. information Customer : VALMET

: 320 DS Engine

1st version kW : 55.0 Rated speed : 2350

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening 1

: 172...175 pressure, bar

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60

: (2.45...2.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 3

Phasing : 0-120-240

Tolerance + - \* : 0.50 (0.75)

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00 Difference ° CS : 4.50...5.50

### BASIC SETTING

1st speed rpm: 1175

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 8.5...8.7

100 s: (8.3...8.9)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 375.0 2nd speed Rack travel in mm: 4.2...4.4 Del.quantity cm3/:0.8...1.5

100 s: (0.5...1.7)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1175 : 85.5...87.5 Del.quantity 1000 : (83.5...89.5)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 97...106

Testing:

1st rack travel in: 9.70

rom : 1215...1225 Speed

2nd rack travel in: 4.00

rpm : 1270...1300 Speed

3rd rack travel in: 4.00

Speed rpm : 1275...1305

4th rack travel in: 1440

Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever

position degrees: 71...79

Setting point w/out bumper spring

**FDIII** Rack travel in mm: 3.8

Testing:

Speed rpm : 100

Minimum rack trave: 19.50

Speed rpm : 375
Rack travel in mm : 3.70...3.90
Rack travel in mm : 2.00

Speed והכיח : 420...480

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1175

Rack travel in m: 10.70...10.80 2nd speed rpm : 500 Rack travel in m: 11.20...11.30

4th speed rpm : 990

Rack travel in m: 10.80...11.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rom : 500 Del.quantity cm3/ : 74.5...77.5 1000 s: (72.0...80.0)

cm3 : -Spread

1000 s: (7.00)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.70

rpm : 1215...1225 Speed

STARTING FUEL DELIVERY

Speed : 100 rom

B03

Del.quantity cm3/: 200.0...210.0 1000 s: (197.0...213.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 375

Rack travel in mm : 4.20...4.40 Del.quantity cm3/: 8.0...15.0 1000 s: (5.5...17.5) Spread cm3 : 3.50 1000 s: (5.50)

:

Remarks:

**APPLICATION** 

Tractor (tractor engines)

Note remarks

Test sheet : RAB 9,7 d 2 Edition : 22.03.91

Replaces : -

Test oil : ISO-4113

Combination no. : 0 400 876 304

Injection pump

Pump designation : PES6A95D410RS2108R

EP type number : 0 410 896 927

Governor

Governor design. : RSV550...1100A1C607L

Governer no. : 0 420 232 380

Customer—spec. information Customer : RABA

Engine : D2356 HM6

1st version kW : 150.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.00

Test nozzle holder

assembly : 0 681 343 009

**Opening** 

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. Values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.70...1.80

: (1.65...1.85)

Rack : ravel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - • : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1080

Rack trave! in mm : 12.70...12.80

Del.quantity cm3/: 11.4...11.6

100 s: (11.2...11.8)

Spread cm3: 0.3

100 s: (0.6)

2nd speed rpm : 550.0 Rack travel in mm : 6.4...6.6 Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.0)

Spread cm3 : 0.3 100 s: (0.5)

100 01 1013

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 3.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1080

Del.quantity : 114.5...116.5 1000 : (112.5...118.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 46...54

Testing:

1st rack travel in: 11.70

Speed rpm : 1120...1130

2nd rack travel in: 4.00

Speed rpm : 1140...1170

B04

3rd rack travel in: 4.00 Speed rpm : 1170...1200 4th rack travel in: 1330 Speed rpm : 0.30...1.70 LOW IDLE 1 Control lever position degrees: 21...29 Setting point w/out bumper spring rpm : 550 Rack travel in mm: 6.0 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 550 Speed Rack travel in mm : 6.40...6.60 Rack travel in mm : 2.00 rpm : 625...685 rpm : 725 Speed Speed Maximum rack trave: 1.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1080 Rack travel in m: 12.70...12.80 2nd speed rpm : 400 Rack travel in m: 12.70...12.90 3rd speed rpm : 250 Rack travel in m: 13.90...14.50 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 700 Speed Del.quantity cm3/: 112.0...115.0 1000 s: (109.5...117.5) rpm : 500 Del.quantity cm3/: 0.0...112.0 1000 s: (0.0...114.0) **BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.70 Speed rpm : 1120...1130

Remarks:

#### Note remarks

Test sheet : DAF 6,2 q 1 : 18.03.91 Edition Replaces : 20.12.90 Test oil : ISO-4113

Combination no. : 0 400 876 375

Injection pump

Pump designation : PES6A95D32ORS2693 EP type number : 0 410 896 914

Governor

Governor design. : RSV300...1300A0c2251

: 0 420 233 272 Governer no.

Customer-spec. information : DAF Customer

Engine : NT 116

1st version kW : 119.0 : 2600 Rated speed

### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 7.50...10.50

: 1-5-3-6-2-4 firing order

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

### BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00

Difference \* CS : 2.50...3.50

B... SETTING

rpm: 850 1st speed

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 6.1...6.2

100 s: (5.9...6.4)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 0.6...1.0

100 s: (0.3...1.2)

cm3 : 0.3 100 s: (0.5) Spread

GUIDE SLEEVE POSITION Control-lever position

> Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

: 61.5...62.5 Del.quantity 1000 : (59.5...64.5)

: 3.50 cm3

Spread 1000 : (6.00)

RATED SPEED

1st version

Control lever cm3 : 3.50Spread position degrees: 101...109 1000 s: (5.50) Testina: Remarks: 1st rack travel in: 9.30 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 Speed rpm: 1390...1420 3rd rack travel in: 4.00 Speed rpm: 1410...1440 4th rack travel in: 1575 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 71...79 Setting point w/out bumper spring rpm : 300 Speed Rack travel in mm: 5.9 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 300 Speed Rack travel in mm : 6.30...6.50 Rack travel in mm : 2.00 : 580...640 Speed POR TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1290 Rack travel in m: 10.30...10.40 2nd speed rpm : 500 Rack travel in m: 11.10...11.20 4th speed rpm : 1050 Rack travel in m: 10.50...10.70 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 1290 Speed Del.quantity cm3/: 68.0...70.0 1000 s: (65.5...72.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.30 Speed rpm : 1340...1350 LOW IDLE rpm : 300 Speed Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 6.0...10.0 1000 s: (3.5...12.5)

#### Note remarks

Test sheet : DAF 6,2 r 1 Edition : 28.03.91 Replaces : 20.12.90 Test oil : ISO-4113

: 0 400 876 376 Combination no.

Injection pump

Pump designation : PES6A95D32ORS2796 EP type number : 0 410 896 901

Governor

: RSV300...1300A0c2248 Governor design.

-2R

: 0 420 233 274 Governer no.

Customer-spec. information Customer : DAF

Engine : NS 156G

1st version kW : 156.0 : 2600 Rated speed

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 7.50...10.50

: 1-5- 3- 6- 2- 4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

### BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 12.80...12.90

Del.guantity cm3/: 8.4...8.5

100 s: (8.2...8.7)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.0 2nd speed

Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 0.6...1.0

100 s: (0.3...1.2)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850 Aneroid pressure h: 1000

Del.quantity 1000 : 84.5...85.5 : (82.5...87.5)

cm3 : 3.50Spread 1000 : (6.00)

RATED SPEED

1st version

Control Lever position degrees: 101...109 Testina: 1st rack travel in: 11.60 rpm : 1320...1330 Speed 2nd rack travel in: 4.00 Speed rpm: 1390...1420 3rd rack travel in: 4.00 rpm : 1410...1440 Speed 4th rack travel in: 1570 Speed riom : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 71...79 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.9 Testing: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 300 Speed Rack travel in mm : 6.30...6.50 Rack travel in mm : 2.00 rpm : 580...640 Speed TORQUE CONTROL Torque control curve - 1st version st speed rpm : 1290
Rack travel in m: 12.60...12.70 1st speed 2nd speed rpm : 500 Rack travel in m: 13.70...13.80 4th speed rpm : 1085 Rack travel in m: 13.10...13.30 Amercia!/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 1000 Pressure : 12.80...12.90 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 10.80...11.00 2nd pressure hPa : 260 Rack travel in m: 12.30...12.40 3rd pressure hPa : 210 Rack travel in m: 11.20...11.40 FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1000 Speed rpm : 1290 Del.quantity cm3/ : 87.0...89.0 1000 s: (84.5...91.5) Aneroid pressure h: -Speed rpm : 600 Del.quantity cm3/ : 44.5...45.5 1000 s: (42.5...47.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.60 rpm : 1320...1330 Speed LOW IDLE rpm : 300 Speed Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 6.0...10.0 1000 s: (3.5...12.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks:

Note remarks

Test sheet : DAF 6,2 q 2 : 28.03.91 Edition : 17.9.90 Replaces Test oil : ISO-4113

Combination no. : 0 400 876 377

Injection pump

Pump designation : PES6A95D32ORS2693Z EP type number : 0 410 896 913

Governor

Governor design. : RSV300...1300A0C2248

-1R

: 0 420 233 273 Governer no.

Customer-spec. information Customer : DAF

Engine : NS156

1st version kW : 156.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test rozzle holder

: 0 681 343 009 assembly

**Opening** 

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm : 7.50...10.50

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 8.7...8.8

100 s: (8.5...9.0)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm: 6.3...6.5

Del.quantity cm3/: 0.6...1.0

100 s: (0.3...1.2) cm3 : 0.3

Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Aneroid pressure h: 700

Del.quantity : 87.5...88.5 1000 : (85.5...90.5)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

**B10** 

Control lever position degrees: 97...103 Testing: 1st rack travel in: 11.00 Speed rpm : 1340...1350 2nd rack travel in: 4.00 rpm : 1390...1420 peed 3rd rack travel in: 4.00 rpm : 1410...1440 Speed 4th rack travel in: 1575 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 66...74 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.9 Testing: Speed rpm : 100 Minimum rack trave: 19.50 rpm : 300 Speed Rack travel in mm : 6.30...6.50 Rack travel in mm: 2.00 : 580...640 Speed rpm TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 12.00...12.10

2nd speed rpm : 500

Rack travel in m: 12.50...12.60

4th speed rpm : 1015

Rack travel in m: 12.20...12.40 Ameroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 700 Pressure Rack travel mm : 12.00...12.10 Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 10.30...10.50 2nd pressure hPa : 290 Rack travel in m: 11.50...11.60 3rd pressure hPa : 250 Rack travel in m: 10.70...10.90

FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: Speed rpm : 600
Del.quantity cm3/: 53.5...54.5
1000 s: (51.5...56.5)

1st version 1mm rack travel less than

full load rack tr: 11.00 Speed rpm : 1340...1350

LOW IDLE

:

Remarks:

B11

#### Note remarks

Test sheet : DAF 6,2 q 3 : 28.03.91 Edition Replaces : 20.12.90 Test oil : ISO-4113

: 0 400 876 378 Combination no.

Injection pump

Pump designation : PES6A950320RS2693 EP type number : 0 410 896 914

Governor

Governor design. : RSV300...1300A0c2248

-2R

: 0 420 233 274 Governer no.

Customer-spec, information Customer : DAF

Engine : NT 133

1st version kW : 133.0 Rated speed : 2600

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 7.50...10.50 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

# BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00 Difference °CS : 2.50...3.50

### BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 7.6...7.7

100 s: (7.4...7.9)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 0.6...1.0

100 s: (0.3...1.2)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850 Aneroid pressure h: 700

Aneroid picos Del.quantity : 76.5...(7.5 1000 : (74.5...79.5) Spread cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version

Control lever position degrees: 103...111 Testing: 1st rack travel in: 9.50 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 Speed rpm : 1390...1420 3rd rack travel in: 4.00 Speed rpm : 1410...1440 4th rack travel in: 1570 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 73...81 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.9 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 300
Rack travel in mm : 6.30...6.50
Rack travel in mm : 2.00 rpm : 580...640 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1290 1st speed Rack travel in m: 10.50...10.60 2nd speed rpm : 500 Rack travel in m: 11.80...11.90 4th speed rpm : 1070 Rack travel in m: 11.10...11.30 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed hPa : 700 Pressure : 11.50...11.60 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 10.10...10.30 2nd pressure hPa : 160 Rack travel in m: 10.70...10.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700

Speed rpm : 1290 Del.quantity cm3/ : 73.0...75.0 1000 s: (70.5...77.5) Aneroid pressure h: -Speed rpm : 600 Del.quantity cm3/: 50.5...51.5 1000 s: (48.5...53.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.50 rpm : 1340...1350 Speed LOW IDLE rpm : 300 Speed Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 6.0...10.0 1000 s: (3.5...12.5) Spread cm3 : 3.50 1000 s: (5.50) Remarks:

B13

#### Note remarks

Test sheet : DAF 6,2 o 8
Edition : 28.03.91
Replaces : 20.12.90
Test oil : ISO-4113

Combination no. : 0 400 876 379

Injection pump

Pump designation : PES6A95D32ORS2693 EP type number : 0 410 896 914

Governor

Governor design. : RSV300...1300A0C2248

-3R

Governer no. : 0 420 233 275

Customer—spec. information Customer : DAF

Engine : NT 133

1st version kW : 133.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

**Opening** 

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 7.50...10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 11.50...11.60

Del.quantity cm3/ : 7.6...7.7

100 s: (7.4...7.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 6.3...6.5

Del.quantity cm3/: 0.6...1.0 100 s: (0.3...1.2)

Spread cm3 : 0.3 100 s: (0.5)

LITTLE SI FEVE POSITION

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm: 850 Aneroid pressure h: 700

Del.quantity : 76.5...77.5

1000 : (74.5...79.5)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version

Control Lever position degrees: 103...111 Testing: 1st rack travel in: 9.50 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 Speed rpm : 1390...1420 3rd rack travel in: 4.00 rpm : 1410...1440 Speed 4th rack travel in: 1570 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 73...81 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.9 Testing: rpm : 100 Speed Minimum rack trave: 19.50 rpm : 300 Rack travel in mm : 6.30...6.50 Rack travel in mm : 2.00 rpm : 580...640 Speed TORQUE CONTROL Torque control curve – 1st version 1st speed rpm : 1290 Rack travel in m: 10.50...10.60 2nd speed rpm : 500 Rack travel in m: 11.80...11.90 4th speed rpm : 1070 Rack travel in m: 11.10...11.30 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 600 hPa : 700 Pressure Rack travel mm : 11.50...11.60 Measurement Speed 1/min: 600 1st pressure hPa : -Rack travel in m: 10.10...10.30 2nd pressure hPa : 160 Rack travel in m: 10.70...10.80 FUEL DELIVERY CHARACTERISTICS

Speed rpm: 1290
Del.quantity cm3/: 73.0..75.0
1000 s: (70.5..77.5)
Aneroid pressure h: Speed rpm: 600
Del.quantity cm3/: 50.5..51.5
1000 s: (48.5..53.5)

BREAKAWAY

1st version
1mm rack travel less than

full load rack tr: 9.50 Speed rpm : 1340...1350

LOW IDLE
Speed rpm : 300

Rack travel in mm : 6.30...6.50 Del.quantity cm3/ : 6.0...10.0 1000 s: (3.5...12.5)

Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

**B**15

1st version

Aneroid pressure h: 700

#### Note remarks

: DEE 7,7 d 6 Test sheet : 19.03.91 Edition Replaces : 7.1.91

Test oil : ISO-4113

: 0 400 876 383 Combination no.

Injection pump

Pump designation : PES6A1000410RS2762-1

: 0 410 806 008 EP type number

Governor

: RSV400...1100AZC2204 Governor design.

-8L

: 0 420 232 551 Governer no.

Customer-spec, information Customer : JOHN DEERE

: 6076TDW02 Engine

: 128.0 1st version kW : 2200 Rated speed

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 190...200

Test nozzle holder

: 1 688 901 101 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.95...3.05 Prestroke mm

: (2.90...3.10) Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

### BASIC SETTING

1st speed rpm : 1100

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 10.2...10.4

100 s: (10.0...10.6)

Spread cm3 : 0.4

100 s: (0.6)

rpm : 400.02nd speed

Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 2.2...2.6

100 s: (2.0...2.8) cm3 : 0.6

Spread 100 s: (0.8)

# GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1100 Speed

Del.quantity : 102.0...104.0 1000 : (100.0...106.0)

: 4.00 Spread cm3

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 40...48

Testina:

1st rack travel in: 10.10

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1195...1205 Speed

3rd rack travel in: 4.00

rpm : 1195...1225 Speed

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 15...23

Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm: 5.5

Testing:

rpm : 100 Speed

Minimum rack trave: 19.00

rpm : 400

Rack travel in mm : 5.40...5.60

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 11.10...11.20

2nd speed rpm : 700

Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 700 Del.quantity cm3/ : 124.0...128.0 1000 s: (122.0...130.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100 Det.quantity cm3/ : 100.0...120.0 1000 s: (95.0...125.0)

LOW IDLE

Speed rpm : 400

**B17** 

Rack travel in mm : 5.90...6.10 Del.quantity cm3/ : 22.0...26.0 1000 s: (20.0...28.0)

cm3 : 6.00Spread 1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47356

Start-of-delivery mark = 13,5° after

start of delivery cyl. 1.

Starting/full-load transition speed from holding magnet = 450 1/min.

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in

full-load delivery with torque-control spring retainer.

#### Note remarks

: VOL 7,1 d : 22.03.91 Test sheet Edition : 16.2.90 Replaces Test oil : ISO-4113

Combination no. : 0 401 846 505

Injection pump

Pump designation : PE6P110A320RS483 : 0 411 816 159 EP type number

Governor

Governor design.: RQV250...1200PA918

: 0 421 813 772 Governer no.

Customer-spec. information Customer : VOLVO

Engine : TD71F; FQ, FAQ

: 162.0 1st version kW Rated speed : 2400

# TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm : (2.95...3.15) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

# BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 12.7...12.9

100 s: (12.4...13.2)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 250.02nd speed Rack travel in mm : 5.3...5.5 Del.quantity cm3/: 1.6...2.0 100 s: (1.3...2.3)

cm3 : 0.3

Spread 100 s: (0.6)

# (B) Setting of injection pump with governor

#### GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 1.10...1.30 travel mm

2nd speed rpm : 380

: 2.30...2.60 travel mm

3rd speed rpm : 500

: 2.90...3.30 travel mm

4th speed rpm : 1260

: 7.70...7.90 travel mm

rpm : 14005th speed

: 9.00...9.30 travel mm

# GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1330 Speed

Rack travel in mm : 15.20...17.80

# FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 900

Del.quantity : 127.0...132.0)

**B18** 

Spread

cm3 : 4.00 1000 : (7.50)

RATED SPEED

1st version Control Lever

position degrees: 109...117

Testina:

1st rack travel in: 11.30

rpm : 1240...1250 Speed

2nd rack travel in: 4.00

rpm : 1380...1410 Speed

4th rack travel in: 1500

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control Lever

position degrees: 56...64

Testing:

Speed : 100 rpm Minimum rack trave: 6.80 : 250 rom

Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

rpm : 250...450 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 hPa : 900 Speed man. Pressure

Rack travel mm : 12.30...12.40

Measurement

1/min: 500 Speed

1st pressure hPa :-

Rack travel in m: 10.20...10.30

2nd pressure hPa : 560
Rack travel in m: 12.00...12.10
3rd pressure hPa : 270
Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/ : 85.0...88.0 1000 s: (82.0...91.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.30

rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 170.0...200.0

1000 s: (166.0...204.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.30...5.50
Del.quantity cm3/: 16.0...20.0

1000 s: (13.0...23.0)

cm3 : 3.00Spread

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks

: VOL 7,1 d 1 Test sheet Edition : 28.03.91 : 5.3.90 Replaces Test oil : ISO-4113

Combination no. : 0 401 846 506

Injection pump

Pump designation: PE6P110A320RS483-1 EP type number : 0 411 816 160

Governor

Governor design. : RQV250...1200PA918-1

: 0 421 813 773 Governer no.

Customer-spec. information Customer : VOLVO

Engine : TD71FS

: 180.0 1st version kW Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 700

Rack travel in mm : 13.10...13.20

Del.quantity cm3/: 14.2...14.4

100 s: (13.9...14.7)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 250.0 Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 1.6...2.0

100 s: (1.3...2.3) cm3 : 0.3

Spread 100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

travel mm : 1.10...1.30

2nd speed rpm

: 380 : 2.30...2.60 travel mm

rpm : 500 3rd speed

: 2.90...3.30 travel mm

4th speed rpm : 1260

: 7.70...7.90 travel mm

5th speed rpm : 1400

: 9.00...9.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 Speed rpm : 1330

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1200

Del.quantity : 142.0...144.0

1000 : (139.0...147.0)

B20

cm3 : 4.00Spread 1000 : (7.50)

RATED SPEED

1st version Control Lever

position degrees: 109...117

Testina:

1st rack travel in: 12.10

rpm : 1240...1250 Speed

2nd rack travel in: 4.00

Speed rpm : 1385...1415 4th rack travel in: 1500

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 56...64

Testing:

Speed rpm : 100 Minimum rack trave: 6.80 rpm

Rack travel in mm : 5.30...5.50

CONSTANT REGULATION

: 250...450 Speed rpm

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rom hPa : 1200 Pressure

: 13.10...13.20 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.20...10.40

2nd pressure hPa : 700

Rack travel in m: 12.80...12.90

3rd pressure hPa : 270

Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 rpm : 1000 Speed

Del.quantity cm3/: 137.0...143.0

1000 s: (135.0...145.0)

Aneroid pressure h: -Speed rom : 700 Del.quantity cm3/: 85.0...88.0

1000 s: (82.0...91.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10

rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 170.0...200.0 1000 s: (166.0...204.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm: 250
Rack travel in mm: 5.30...5.50 Del.quantity cm3/: 16.0...20.0

1000 s: (13.0...23.0)

cm3 : 3.00Spread 1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Note remarks

Test sheet : DAF 11,6m15 Edition : 01.03.91 : 15.11.90 Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 567

Injection pump

Pump designation : PE6P100A320RS384-1

EP type number : 0 411 806 189

Governor

Governor design. : R9225/1100PA974 : 0 421 801 568 Governer no.

Customer-spec. information : DAF Customer

: DKL 1160 Engine

: 151.0 1st version kW Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.20...3.30 Prestroke mm : (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 11.0...11.2

100 s: (10.8...11.4)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 225.0 2nd speed Rack travel in mm : 7.6...7.8 Del.quantity cm3/: 1.0...1.4

100 s: (0.7...1.6)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 550

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Del.quantity : 110.5...112.5

1000 : (108.5...114.5)

: 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

1st version

Setting point:

rpm Rack travel in mm: 15.8

Testing:

1st rack travel in: 10.40

rpm : 1140...1155 Speed

2nd rack travel in: 4.00

: 1170...1200 Speed COM .

4th rack travel in: 1300

Speed rpm : 0.00...1.00 LOW IDLE 1 Setting point w/out bumper spring speed rpm : 225 Rack travel in mm : 7.7 Testing: rpm : 100 Speed Minimum rack trave: 7.90 Speed rpm: 225
Rack travel in mm: 7.60...7.80
Rack travel in mm: 2.00
Speed rpm: 325...365 TORQUE CONTROL Dimension a mm : 0.60 Torque control curve - 1st version 1st speed rpm : 600 Rack travel in m: 11.90...12.00 2nd speed rpm : 1050
Rack travel in m: 11.30...11.50
3rd speed rpm : 800 Rack travel in m: 11.60...11.80 4th speed rpm : 855 Rack travel in m: 11.40...11.70 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 1050 Del.quantity cm3/: 107.0...111.0 1000 s: (104.5...113.5) RACK STOP ADJUSTMENT Speed rem : 600 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.40 rpm : 1140...1155 Speed STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 185.0...225.0 1000 s: (181.0...229.0) Rack travel in mm : 19.50...21.00 LOW IDLE rpm : 225 Speed Rack travel in mm: 7.60...7.80 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5)

cm3 : 3.50 1000 s: (5.50) Spread Remarks:

**APPLICATION** 

**Omnibus** 

**B23** 

Note remarks

Test sheet : VOL 10,0q18 Edition : 28.03.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 758

Injection pump

Pump designation : PE6P110A320RS3108Z

: 0 411 816 728 EP type number

Governor

Governor design. : RQV250...1100PA920

: 0 421 813 777 Governer no.

Customer spec. information : VOLVO Customer

: THD100EB Engine

1st version kW : 160.0 Rated speed : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 12.2...12.4

100 s: (11.9...12.7)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 250.0 Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 3.0...3.4 100 s: (2.7...3.6)

Spread cm3 : 0.3100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

travel ma : 1.10...1.30

; 500 2nd speed rpm

: 4.10...4.90 travel mm

3rd speed rpm : 700

: 6.30...6.70 travel mm

rpm : 950 4th speed

: 6.30...6.70 travel mm

rpm : 1100 5th speed : 7.00...7.50 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1175 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 750

Del.quantity : 122.0...27.0)

**B24** 

Spread cm3 : 4.001000 : (7.50)

RATED SPEED

1st version Control Lever

position degrees: 61...69

Testing:

1st rack travel in: 9.50

rpm : 1160...1170 Speed

2nd rack travel in: 4.00

rpm : 1225...1255 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 7...15

Testing:

Speed rpm : 100 Minimum rack trave: 6.80 rpm : 250 Speed

Rack travel in mm : 5.30...5.50

Rack travel in mm: 2.00 rpm : 350...410 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500 hPa : 750 Pressure

: 10.50...10.60 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.60...9.80

2nd pressure hPa : 265

Rack travel in m: 9.90...10.00

3rd pressure hPa : 310

Rack travel in m: 10.20...10.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700

Del.quantity cm3/: 105.5...108.5

1000 s: (103.0...111.0)

**BREAKAWAY** 

**B25** 

1st version 1mm rack travel less than

full load rack tr: 9.50

rpm : 1160...1170 Speed

STARTING FUEL DELIVERY

LOW IDLE

Speed rpm : 250

Rack travel in mm: 5.30...5.50 Del.quantity cm3/: 30.0...34.0 1000 s: (27.5...36.5)

cm3 : 3.00 1000 s: (6.00) Spread

Remarks:

On activation of the starting solenoid, the start position must be reached.

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

**APPLICATION** 

**Omnibus** 

# Note remarks

: VOL 10,0a19 Test sheet : 28.03.91 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 846 759

Injection pump

Pump designation : PE6P110A320RS3108Y : 0 411 816 729 EP type number

Governor

Governor design. : RQV250...1100PA920-1

: 0 421 815 778 Governer no.

Customer-spec. information : VOLVO Customer

: THD100EC Engine

: 180.0 1st version kW Rated speed : 2200

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

## BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 13.8...14.0

100 s: (13.5...14.3)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm : 5.2...5.4 Del.quantity cm3/ : 3.0...3.4 100 s: (2.7...3.6)

cm3 : 0.3Spread 100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.10...1.30 travel mm

rpm : 500 2nd speed

: 4.10...4.90 travel mm

rpm : 700 3rd speed

: 6.30...6.70 travel mm

rpm : 950 4th speed

: 6.30...6.70 travel mm

: 1100 5th speed rpm

: 7.00...7.50 travel mm

# GUIDE SLEEVE POSITION

Control-lever position

Degree: -1

rpm : 1175

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 900

Del.quantity : 130.0...143.0)

cm3 : 4.00 1000 : (7.50) cm3 Spread

RATED SPEED

1st version Control Lever

position degrees: 61...69

Testing:

1st rack travel in: 10.10

Speed rpm: 1160...1170
2nd rack travel in: 4.00
Speed rpm: 1225...1255
4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 8...16

Testina:

Speed rpm : 100 Minimum rack trave: 6.70

Speed rpm : 250 Rack travel in mm : 5.20...5.40

CONSTANT REGULATION

rpm : 250...425 Speed

Aneroid/Altitude Compensator Test

1st version Setting

rpm : 500 Speed hPa : 900 Pressure

Rack travel mm : 11.10...11.20

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 9.60...9.80 2nd pressure hPa : 275 Rack travel in m: 9.90...10.00

3rd pressure hPa : 400

Rack travel in m: 10.70...10.90

F\_aL DELIVERY CHARACTERISTICS

1st version

Ameroid pressure h: -

Speed rpm : 700
Del.quantity cm3/: 105.5...108.5
1000 s: (103.0...111.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.10

Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 170.0...200.0

1000 s: (166.0...204.0) Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.20...5.40 Del.quantity cm3/: 30.0...34.0

1000 s: (27.5...36.5) cm3 : 3.00 1000 s: (6.00)

Spread

Remarks:

On activation of the starting solenoid, the start position must be reached.

Delivery-valve spring pre-tension = 2.40...2.60 mm.
Permissible alteration from 2.20...2.90

APPLICATION

**Omnibus** 

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : VOL 10,0q20 Edition : 28.03.91 Replaces Test oil : ISO-4113 Combination no. : 0 401 846 760 Injection pump EP type number : 0 411 816 730 Governor : 0 421 813 779 Governer no. Customer-spec. information Customer : VOLVO Engine : THD100ED : 203.0 1st version kW : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 0 681 343 009 **Opening** pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values

Pump designation: PE6P110A320RS3108X Governor design. : RQV250...1100PA920-2 Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm ; 3.00...3.10 : (2.95...3.15) Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order : 0-60-120-180-240-300 Phasing Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ Time to cyl. no. : 1 BASIC SETTING rpm: 700 1st speed Rack travel in mm : 12.10...12.20 Del.quantity cm3/: 16.0...16.2 100 s: (15.7...16.5) cm3 : 0.4Spread 100 s: (0.7) 2nd speed rpm : 250.0 Rack travel in mm : 5.0...5.2 Del.quantity cm3/ : 3.0...3.4 100 s: (2.7...3.6) Spread cm3 : 0.3100 s: (0.6) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 250 1st speed : 1.10...1.30 travel mm rpm : 500 2nd speed : 4.10...4.90 travel mm 3rd speed rpm : 700 : 6.30...6.70 travel mm 4th speed rpm : 950 travel mm : 6.30...6.70 rpm : 1100 5th speed : 7.00...7.50 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1175 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 700 Speed Aneroid pressure h: 900 Del.quantity : 100.0...165.0)

Spread

cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control Lever

position degrees: 61...69

Testing:

1st rack travel in: 11.10

rpm : 1160...1170 Speed

2nd rack travel in: 4.00

rpm : 1225...1255 Speed

4th rack travel in: 1350

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control Lever

position degrees: 8...16

Testing:

rpm : 100 Speed

Minimum rack trave: 6.70

rpm : 250 Speed

Rack travel in mm : 5.00...5.20

CONSTANT REGULATION

rpm : 250...425 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rpm : 500

Pressure hPa : 900

Rack travel mm : 12.10...12.20

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.30...9.40

2nd pressure hPa : 275 Rack travel in m: 9.60...9.70

3rd pressure hPa : 650

Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/ : 105.5...108.5

1000 s: (103.0...111.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.10

rpm : 1160...1170 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 170.0...200.0

1000 s: (166.0...204.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.00...5.20
Del.quantity cm3/: 30.0...34.0

1000 s: (27.5...36.5) cm3 : 3.00

Spread

1000 s: (6.00)

Remarks:

On activation of the starting solenoid, the start position must be reached.

Delivery—valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

APPLICATION

**Omnibus** 

#### Note remarks

Test sheet : VOL 10,0q21 : 28.03.91 Edition

Replaces

Test oil

: ISO-4113

Combination no. : 0 401 846 784

Injection pump

Pump designation : PE6P110A320RS3108V

EP type number

: 0 411 816 737

Governor

Governor design. : RQV250...1100PA920-3

Governer no.

: 0 421 813 780

Customer-spec. information Customer : VOLVO

Engine

: B10/TH0101FD

1st version kW Rated speed

: 210.0 : 2200

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening .

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Lenath mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.70...13.80

Del.guantity cm3/: 18.0...18.2

100 s: (17.7...18.5)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 3.0...3.4

100 s: (2.7...3.6) cm3 : 0.3

Spread 100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

travel mm : 1.10...1.30 rpm : 500 2nd speed

: 4.10...4.90 travel mm

3rd speed rpm : 700

: 6.30...6.70 travel mm

rpm : 950 4th speed

: 6.30...6.70 travel mm

rpm : 1100 5th speed

travel mm : 7.00...7.50

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1175 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1200

Del.quantity : 100.0...185.0)

**COS** 

Spread

cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 61...69

Testina:

1st rack travel in: 12.70

rpm : 1160...1170 Speed

2nd rack travel in: 4.00

rpm : 1240...1270 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 7...15

Testing:

Speed rpm : 100

Minimum rack trave: 6.80

Speed rpm : 250

Rack travel in mm : 5.30...5.50

Rack travel in mm : 2.00

rpm : 345...405 Speed

Aneroid/Altitude

Compensator Test

1st version

Setting

: 500 Speed rpm

hPa : 1200 Pressure

Rack travel mm : 13.70...13.80

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.60...9.90

2nd pressure hPa : 300

Rack travel in m: 10.00...10.10

3rd pressure hPa : 870

Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 700 Speed

Del.quantity cm3/: 106.0...108.0

1000 s: (103.0...111.0)

BREAKAWAY

co3

1st version

1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 1160...1170

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 160.0...190.0

1000 s: (-)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed

rpm

Rack travel in mm : 5.30...5.50 Del.quantity cm3/: 30.0...34.0 1000 s: (27.5...36.5)

cm3 : 3.00

1000 s: (6.00)

Remarks:

Spread

On activation of the starting solenoid, the start position must be reached.

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

**APPLICATION** 

Omnibus

: 3.60...3.70 : (3.55...3.75) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Note remarks : VOL 12,2 h : 28.03.91 Test sheet Edition Replaces : 18.2.91 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 401 846 826 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PE6P120A32DRS3178 EP type number : 0 411 826 752 BASIC SETTING Governor Governor design. : RQV250...1025PA921-2 1st speed rpm: 700 : 0 421 813 785 Governer no. Rack travel in mm : 14.00...14.10 Customer-spec. information : VOLVO Del.quantity cm3/: 25.3...25.5 Customer : TD122FS Engine 100 s: (25.0...25.8) 1st version kW : 287.0 cm3 : 0.5Spread : 2050 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 250.0 2nd speed Test oil Rack travel in mm : 4.8...5.1 inlet temp. °C : 38...42 Del.quantity cm3/: 1.7...2.2 100 s: (1.5...2.5) Overflow valve cm3 : 0.5 Spread : 1 457 413 010 100 s: (0.7) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL rpm : 250 1st speed Opening. travel mm : 1.00...1.40 pressure, bar : 207...210 rpm : 450 2nd speed : 3.60...4.20 travel mm Orifice plate rpm : 800 3rd speed diameter mm : 6.30...6.70 : 0,8 travel mm 4th speed : 1070 rpm travel mm : 8.00...8.20 Test lines : 1 680 750 067 : 1150 5th speed rpm : 9.30...9.70 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION : 6.00x1.50x1000 x Length mm Control-lever position Degree: -1 (A) Injection pump setting values Speed rpm : 1100 Insp. values in parentheses Rack travel in mm : 15.20...17.80 Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version Test pressure, bar: 25...27 Speed rpm : 700 Aneroid pressure h: 1200

Del.quantity : 253.0...255.0

1000 : (250.0...258.0)

: 5.00 cm3 Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 13.00

rpm : 1055...1065 Speed

2nd rack travel in: 4.00

Speed rpm : 1140...1170 4th rack travel in: 1250

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 59...67

Testing:

: 100 Speed rpm Minimum rack trave: 6.40 Speed rpm : 250

Rack travel in mm : 4.80...5.10

CONSTANT REGULATION

: 250...400 Speed mon

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm

rpm : 500 hPa : 1200 Pressure

Rack travel mm : 14.00...14.10

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.30...10.50

2nd pressure hPa : 90

Rack travel in m: 10.50...10.60 3rd pressure hPa : 760 Rack travel in m: 13.70...13.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/ : 163.0...165.0 1000 s: (160.0...168.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 13.00

rpm : 1055...1065 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 270.0...310.0

1000 s: (266.0...314.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

: 250 Speed rpm

Rack travel in mm : 4.80...5.10

Del.quantity cm3/: 17.5...22.5 1000 s: (15.0...25.0)

cm3 : 5.00 1000 s: (7.00) Spread

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Start-of-delivery setting with ROBO

diaphragm.

Prestroke mm : 2.60...2.70 : (2.55...2.75) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : VOL 10,0 z2 Edition : 28.03.91 Replaces Test oil : ISO-4113 Phasing Combination no. : 0 401 846 836 Tolerance + - ° Injection pump Time to cyl. no. : 1 Pump designation : PE6P120A320RS3186-1 EP type number : 0 411 826 774 BASIC SETTING Governor Governor design. : RQV250...1100PA921-5 1st speed Governer no. : 0 421 813 788 Rack travel in mm : 11.40...11.50 Customer-spec. information Customer : VOLVO Del.guantity cm3/: 19.7...19.9 Engine : TD102FDQ 1st version kW : 232.0 Spread : 2200 Rated speed TEST BENCH REQUIREMENTS 2nd speed Rack travel in mm : 4.2...4.4 Test oil inlet temp. °C : 38...42 Del.quantity cm3/: 1.7...2.2 Overflow valve Spread : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly Openina : 207...210 pressure, bar Orifice plate diameter mm : 0,8 : 1 680 750 067 Test lines Outside diameter x Wall thickness : 6.00x1.50x1000 x Length mm (A) Injection pump setting values

100 s: (0.7) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 250 1st speed travel mm : 1.00...1.40 : 350 2nd speed rpm travel mm 2.20...2.80 3rd speed : 700 rpm 6.40...6.60 travel mm 4th speed 1135 rpm 7.70...7.90 travel mm : 1210 5th speed rpm : 8.90...9.30 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1170 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700 Aneroid pressure h: 1000

: 0-60-120-180-240-300

: 0.50 (0.75)

100 s: (19.4...20.2)

rpm: 700

cm3 : 0.5

100 s: (0.9)

rpm : 250.0

cm3 : 0.5

100 s: (1.4...2.4)

Insp. values in parentheses

Set equal delivery quant.

per values

Test pressure, bar: 25...27

BEGINNING OF DELIVERY

Del.quantity : 197.0...199.0

1000 : (194.0...202.0)

: 5.00 Spread cm3 1000 : (9.00)

# RATED SPEED

1st version Control lever

position degrees: 112...120

Testing:

1st rack travel in: 10.40

Speed rpm : 1130...1140

2nd rack travel in: 4.00

rpm : 1195...1225

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 59...67

Testing:

Speed : 100 rpm Minimum rack trave: 5.70 : 250 Speed rom

Rack travel in mm : 4.20...4.40

CONSTANT REGULATION

rpm : 250...360 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 1000 Pressure

: 11.40...11.50 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.70...8.90

2nd pressure hPa : 80

Rack travel in m: 9.00...9.10

3rd pressure hPa : 400

Rack travel in m: 11.00...11.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/ : 143.0...145.0

1000 s: (140.0...148.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.40

rpm : 1130...1140 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 260.0...310.0 1000 s: (256.0...314.0)

Rack travel in mm : 20.00...21.00

LCW IDLE

Speed rpm : 250
Rack travel in mm : 4.20...4.40
Del.quantity cm3/: 17.0...22.0

1000 s: (14.5...24.5)

cm3 : 5.00Spread

1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Note remarks

: VOL 10,0 y2 : 28.03.91 Test sheet Edition

Replaces

Test oil : ISO-4113

: 0 401 846 851 Combination no.

Injection pump

Pump designation : PE6P110A320RS3080

EP type number : 0 411 816 722

Governor

Governor design. : RQV250...1050PA921-9

: D 421 813 792 Governer no.

Customer-spec. information Customer : VOLVO

Engine : TD102FAQ

1st version kW : 221.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm **:** 3.00...3.10 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASTC SETTING

1st speed rpm: 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 18.5...18.7

100 s: (18.2...19.0)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 250.0 Rack travel in mm : 3.8...4.0

Del.quantity cm3/: 1.5...1.9

100 s: (1.2...2.1)

Spread cm3 : 0.3

100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

travel mm : 1.00...1.40

2nd speed 350 rpm

2.20...2.80 travel mm

3rd speed rpm : 700

travel mm : 6.30...6.70

4th speed rpm : 1085

travel mm : 7.70...7.90

5th speed : 1170 rpm

: 9.10...9.50 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1120 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 185.0...190.0)

**c08** 

Spread cm3 : 4.00

1000 : (7.50)

#### RATED SPEED

1st version Control lever

position degrees: 114...122

Testing:

1st rack travel in: 12.00

Speed rpm : 1080...1090

2nd rack travel in: 4.00

Speed rpm : 1155...1185 4th rack travel in: 1300 Speed

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 59...67

Testing:

Speed rpm : 100 Minimum rack trave: 5.30 Speed rpm: 250

Rack travel in mm : 3.80...4.00

CONSTANT REGULATION

rpm : 250...370 Speed

Aneroid/Altitude Compensator Test

1st version Settina

rpm : 500 hPa : 900 Speed Fressure

Rack travel mm : 13.00...13.10

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 10.20...10.40

2nd pressure hPa : 520

Rack travel in m: 12.80...12.90 3rd pressure hPa : 150

Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -Speed rpm : 700

Del.quantity cm3/: 136.0...139.0 1000 s: (133.5...141.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.00

Speed rpm : 1080...1090

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 160.0...190.0 1000 s: (156.0...194.0) Rack travel in mm: 20.00...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 3.80...4.00 Del.quantity cm3/: 15.0...19.0 1000 s: (12.5...21.5)

cm3 : 3.00Spread 1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

#### Note remarks

Test sheet : VOL 12,2 e2 Edition : 28.03.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 852

Injection pump

Pump designation : PE6P120A320RS3118 EP type number : 0 411 826 726

Governor

Governor design. : RQV250...1050PA921-

10

Governer no. : 0 421 813 793

Customer-spec. information Customer : VOLVO

: TD122FAQ Engine

1st version kW : 287.0 : 2100 Rated speed

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test rozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70 : (2.55...2.75)

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed rpm: 700

Rack travel in mm: 13.20...13.30

Del.quantity cm3/: 23.4...23.6

109 s: (23.1...23.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.0 2nd speed

Rack travel in mm : 3.3...3.5

Del.quantity cm3/: 1.8...2.3 100 s: (1.5...2.5)

cm3 : 0.5

Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

travel mm : 1.00...1.40

rpm : 350 2nd speed

2.20...2.80 travel mm

rpm : 700 3rd speed

travel mm : 6.40...6.60

rpm : 1085 4th speed

travel mm : 8.40...8.60

rpm : 1160 5th speed

: 9.60...10.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1085

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 700 Aneroid pressure h: 900

: 234.5...236.5 Del.quantity

1000 : (231.5...239.5)

: 5.00 cm3 Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 12.20

Speed rpm : 1080...1090

2nd rack travel in: 4.00

Speed rpm : 1145...1175 4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 59...67

Testing:

Speed rpm : 100 Minimum rack trave: 4.80 Speed rpm : 250 Rack travel in mm : 3.30...3.50

CONSTANT REGULATION

rpm : 250...350 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm Pressure hPa : 900

: 13.20...13.30 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 9.20...9.40

2nd pressure hPa : 80

Rack travel in m: 9.60...9.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 700 Speed

Del.quantity cm3/: 154.0...156.0 1000 s: (151.0...159.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 12.20

rpm : 1080...1090 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 240.0...280.0

1000 s: (236.0...284.0) Rack travel in mm : 20.00...21.00

LOW IDLE

Speed

rpm : 250

Rack travel in mm : 3.30...3.50 Del.quantity cm3/: 18.0...23.0 1000 s: (15.5...25.5)

cm3 : 5.00Spread

1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : VOL 12,2 e3 Edition : 28.03.91 Replaces Test oil : ISO-4113 Combination no. : 0 401 846 853 Injection pump Pump designation : PE6P120A320RS3118 EP type number : 0 411 826 726 Governor Governor design. : RQV250...900PA921-11 : 0 421 813 794 Governer no. Customer-spec. information Customer : VOLVO Engine : TD122FBQ : 287.0 1st version kW : 1800 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 019 Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test Lines : 1 680 750 067 Outside diameter x Wall thickness x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70 : (2.55...2.75) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Phasina Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 700 Rack travel in mm : 13.20...13.30 Del.quantity cm3/: 23.4...23.6 100 s: (23.1...23.9) Spread cm3 : 0.5100 s: (0.9) 2nd speed rpm : 250.0 Rack travel in mm : 3.3...3.5 Del.quantity cm3/ : 1.8...2.3 100 s: (1.5...2.5) cm3 : 0.5Spread 100 s: (0.7) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 250 : 1.00...1.40 1st speed travel mm 2nd speed : 350 rpm : 2.20...2.80 travel mm 3rd speed : 700 rpm 6.40...6.60 travel mm 4th speed 935 rpm 7.60...7.80 travel mm 5th speed 1015 mgn travel mm : 8.90...9.30 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 980 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700

Aneroid pressure h: 900

Speed

Del.quantity : 234.5...236.5 1000 : (231.5...239.5)

: 5.00 cm3 Spread 1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 113...121

Testing:

1st rack travel in: 12.20 rpm : 930...940 Speed

2nd rack travel in: 4.00

Speed rpm : 1000...1030

4th rack travel in: 1150

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 59...67

Setting point w/out bumper spring

rpm : 250 Speed Rack travel in mm: 3.4

Testing:

Speed rom : 100 Minimum rack trave: 4.80 rpm : 250 Speed

Rack travel in mm : 3.30...3.50

CONSTANT REGULATION

rpm : 250...350 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm Pressure hPa : 900

Rack travel mm : 13.20...13.30

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.20...9.40

2nd pressure hPa : 80

Rack travel in m: 9.60...9.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 700 Speed

Del.quantity\_cm3/ : 154.0...156.0 1000 s: (151.0...159.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 12.20

rpm : 930...940 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 240.0...280.0 1000 s: (236.0...284.0) Rack travel in mm: 20.00...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 3.30...3.50 Del.quantity cm3/: 18.0...23.0 1000 s: (15.5...25.5)

cm3 : 5.00 Spread

1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : VOL 12,2 e4 Edition : 28.03.91 Replaces Test oil : ISO-4113 Combination no. : 0 401 846 854 Injection pump Pump designation : PE6P120A320RS3118-1 EP type number : 0 411 826 739 Governor Governor design. : RQV250...850PA921-12 : 0 421 813 795 Governer no. Customer-spec. information Customer : VOLVO Engine : TD122FCQ : 287.0 1st version kW Rated speed : 1700 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly **Opening** pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test Lines : 1 680 750 067 Outside diameter x Wall thickness : 6.00X1.50X1000 x Length mm

(A) Injection pump setting values

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Insp. values in parentheses Set equal delivery quant.

: 2.60...2.70 Prestroke mm : (2.55...2.75) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 700 Rack travel in mm : 12.30...12.40 Del.quantity cm3/: 21.4...21.6 100 s: (21.1...21.9) Spread cm3 : 0.5100 s: (0.9) rpm : 250.0 2nd speed Rack travel in mm : 3.3...3.5 Del.quantity cm3/: 1.8...2.3 100 s: (1.5...2.5) cm3 : 0.5 100 s: (0.7) Spread (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 250 travel mm : 1.00...1.40 350 2.20...2.80 2nd speed rpm travel mm 3rd speed : 700 rpm : 6.40...6.60 travel mm 4th speed : 885 rpm : 7.60...7.80 travel mm 5th speed : 955 rpm : 8.80...9.20 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 930 Speed Rack travel in mm: 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version

rom : 700

Aneroid pressure h: 900

Speed

Del.quantity : 214.5...216.5

1000 : (211.5...219.5)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 112...120

Testing:

1st rack travel in: 11.30 rpm : 880...890 Speed

2nd rack travel in: 4.00

rpm : 990...970 Speed 4th rack travel in: 1100

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 59...67

Testing:

Speed : 100 rom Minimum rack trave: 4.80 rpm : 250 Speed

Rack travel in mm : 3.30...3.50

CONSTANT REGULATION

rpm : 250...350 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm

hPa : 900 Pressure Rack travel mm : 12.30...12.40

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.20...9.40

2nd pressure hPa : 80

Rack travel in m: 9.60...9.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/ : 154.0...156.0

1000 s: (151.0...159.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.30

rpm : 880...890 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 240.0...280.0

1000 s: (236.0...284.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 3.30...3.50
Del.quantity cm3/: 18.0...23.0

1000 s: (15.5...25.5)

cm3 : 5.00 Spread 1000 s: (7,00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : VOL 12,2 a3 Edition : 19.03.91 : 15.1.88 Replaces Test oil : ISO-4113 Combination no. : 0 401 846 855 Injection pump Pump designation : PE6P120A320R\$3178-1 EP type number : 0 411 826 764 Governor Governor design. : RQV250...950PA657-21 : 0 421 813 651 Governer no. Customer-spec. information Customer : VOLVO Engine : Tv122FK, FR 1st version kW : 287.0 : 1900 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 019 Openina pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test Lines : 1 680 750 067 Outside diameter x Wall thickness : 6.00x1.50x1000 x Length mm

(A) Injection pump setting values

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Insp. values in parentheses

Prestroke mm : 3.60...3.70 : (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4 Phasina : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 700 Rack travel in mm: 14.20...14.30 Del.quantity cm3/: 25.9...26.1 100 s: (25.6...26.4) cm3 : 0.5Spread 100 s: (0.9) rpm : 250.0 2nd speed Rack travel in mm: 4.8...5.1 Del.quantity cm3/: 1.7...2.2 100 s: (1.4...2.5) Spread cm3 : 0.5100 s: (0.7) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 250 1st speed : 1.00...1.40 travel mm 2nd speed rpm : 450 : 3.60...4.20 travel mm rpm : 700 3rd speed : 6.40...6.60 travel mm rpm : 985 4th speed travel mm : 8.20...8.40 : 1060. 5th speed rpm : 9.60...10.00 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1000 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version

rpm : 700

Aneroid pressure h: 1000

Speed

Del.quantity : 259.0...261.0

1000 : (256.0...264.0)

cm3 : 5.00Spread 1000 : (9.00)

## RATED SPEED

1st version Control lever

position degrees: 117...125

Testing:

1st rack travel in: 13.20 Speed rpm : 990...1000

2nd rack travel in: 4.00

Speed rpm : 1090...1120

4th rack travel in: 1200

Speed npm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 61...69

Testing:

Speed : 100 rpm Minimum rack trave: 6.50 rpm

Rack travel in mm : 4.80...5.10

CONSTANT REGULATION

Speed rpm : 250...380

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm Pressure hPa : 1000

: 14.20...14.30 Rack travel mm

Measurement

1/min : 500 Speed

1st pressure hPa : -

Rack travel in m: 10.00...10.20 2nd pressure hPa : 120 Rack travel in m: 10.40...10.50

3rd pressure hPa : 875

Rack travel in m: 13.80...14.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/ : 163.0...165.0 1000 s: (160.0...168.0)

### **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 13.20

Speed rpm : 990...1000

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 270.0...310.0

1000 s: (266.0...314.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.80...5.10
Del.quantity cm3/ : 17.5...22.5
1000 s: (14.5...25.5)

cm3 : 5.00 Spread

1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : VOL 12,2 h3 Edition : 28.03.91 Replaces Test oil : ISO-4113 Combination no. : 0 401 846 855 Injection pump Pump designation: PE6P120A320RS3178-1 : 0 411 826 764 EP type number Governor Governor design. : RQV250...950PA921-13 : D 421 813 796 Governer no. Customer-spec. information : VOLVO Customer Engine : TD122FK,FR 1st version kW : 287.0 : 1900 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 019 Openina pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness : 6.00X1.50X1000 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Prestroke mm : 3.60...3.70 : (3.55...3.75) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 700 Rack travel in mm : 14.20...14.30 Del.quantity cm3/: 25.9...26.1 100 s: (25.6...26.4) cm3 : 0.5Spread 100 s: (0.9) rpm : 250.0 2nd speed Rack travel in mm: 4.8...5.1 Del.quantity cm3/: 1.7...2.2 100 s: (1.4...2.5) cm3 : 0.5 Spread 100 s: (0.7) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 250 1st speed : 1.00...1.40 travel mm : 450 2nd speed rpm : 3.60...4.20 : 700 travel mm 3rd speed rpm travel mm : 6.40...6.60 : 985 4th speed rpm : 8.20...8.40 travel mm rpm : 1060 5th speed : 9.60...10.00 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1000 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700 Aneroid pressure h: 1000

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 259.0...261.0 1000 : (256.0...264.0) Del.quantity

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st versi Control lever

position degrees: 117...125

Testing:

1st rack travel in: 13.20 rpm : 990...1000 Speed

2nd rack travel in: 4.00

rpm : 1090...1120 Speed

4th rack travel in: 1200

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 61...69

Testina:

Speed : 100 **CIDM** Minimum rack trave: 6.50 : 250 rpm

Rack travel in mm : 4.80...5.10

CONSTANT REGULATION

rpm : 250...380 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 man hPa : 1000 Pressure

Rack travel mm : 14.20...14.30

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.00...10.20

2nd pressure hPa : 120

Rack travel in m: 10.40...10.50

3rd pressure hPa : 875

Rack travel in m: 13.80...14.00

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/ : 163.0...165.0

1000 s: (160.0...168.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 13.20

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 270.0...310.0

1000 s: (266.0...314.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 4.80...5.10
Del.quantity cm3/: 17.5...22.5

1000 s: (14.5...25.5)

cm3 : 5.00Spread

1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Note remarks

Test sheet : VOL 10,0 y3 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 856

Injection pump

Pump designation: PE6P110A320RS3080-2

EP type number : 0 411 816 750

Governor

Governor design. : RQV250...1050PA921-7

: 0 421 813 790 Governer no.

Customer-spec. information Customer : VOLVO

Engine : TD102FEQ

1st version kW : 191.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.00...3.10 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Phasing : 28.03.91 Tolerance + - °

BASIC SETTING

Firing order

1st speed rpm: 700

Time to cyl. no. : 1

Rack travel in mm: 11.50...11.60

Del.quantity cm3/: 16.2...16.4

100 s: (15.9...16.7)

: 1-5-3-6-2-4

: 0-60-120-180-240-300

: 0.50 (0.75)

cm3 : 0.4Spread

100 s: (0.7)

2nd speed rpm : 250.0 Rack travel in mm : 3.8...4.0 Del.quantity cm3/: 1.5...1.9

100 s: (1.2...2.1)

Spread cm3 : 0.3100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

1.00...1.40 travel mm

2nd speed rpm

: 350 : 2.20...2.80 travel mm

3rd speed rpm : 750

: 6.30...6.70 travel mm

rpm : 1085 4th speed

: 7.80...8.00 travel mm 5th speed rpm : 1160

travel mm : 9.00...9.40

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1120 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 900

Del.quantity : 102.0...167.0)

C20

cm3 : 4.00Spread 1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 113...121

Testing:

1st rack travel in: 10.50 rpm : 1080...1090 Speed

2nd rack travel in: 4.00

Speed rpm : 1140...1170

4th rack travel in: 1300

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 59...67

Testing:

Speed : 100 rpm Minimum rack trave: 5.30 rpm : 250 Speed

Rack travel in mm : 3.80...4.00

CONSTANT REGULATION

rpm : 250...360 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 hPa : 900 Speed rom Pressure

Rack travel mm : 11.50...11.60

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.90...10.10

2nd pressure hPa : 110
Rack travel in m: 10.20...10.30
3rd pressure hPa : 320

Rack travel in m: 11.20...11.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700
Del.quantity cm3/ : 132.0...135.0
1000 s: (129.5...137.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.50

rpm : 1080...1090 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 160.0...190.0 1000 s: (156.0...194.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 3.80...4.00 Del.quantity cm3/: 15.0...19.0 1000 s: (12.5...21.5)

cm3 : 3.00 Spread

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Note remarks

: VOL 10,0 v2 Test sheet Edition : 02.10.89 Replaces : 11.12.87 Test oil : ISO-4113

Combination no. : 0 401 846 857

Injection pump

Pump designation: PE6P110A320RS3080-1 EP type number : 0 411 816 734

Governor

Governor design. : RQV250....950PA657-

16

: 0 421 813 655 Governer no.

Customer spec. information

Customer : VOLVO-TRUCK

Engine : TD102FBQ

1st version kW : 228.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 14.30...14.40

Del.quantity cm3/: 19.9...20.1

100 s: (19.6...20.4)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 250.02nd speed Rack travel in mm : 3.8...4.0 Del.quantity cm3/ : 1.5...1.9 100 s: (1.2...2.1)

Spread cm3 : 0.3100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 1.00...1.40 travel mm

: 350 2nd speed rpm travel mm

: 2.20...2.80 3rd speed : 750 rom

travel mm : 6.30...6.70

4th speed 985 rpm

travel mm 8.20...8.40 5th speed : 1060

rpm : 9.10...9.50 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 985 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 900

Del.quantity : 199.0...204.0)

Spread

: 4.00 cm3 1000 : (7.50)

RATED SPEED

1st version

Control Lever

position degrees: 116...124

Testina:

1st rack travel in: 13.30 Speed rpm : 980...990 2nd rack travel in: 4.00

rpm : 1050...1080 Speed

4th rack travel in: 1250

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 59...67

Testina:

Speed : 100 rpm Minimum rack trave: 5.30 Speed rpm : 250

Rack travel in mm : 3.80...4.00

CONSTANT REGULATION

rpm : 250...360 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rom hPa : 900 Pressure

Rack travel mm : 14.30...14.40

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 10.80...11.00 2nd pressure hPa : 110 Rack travel in m: 11.10...11.20

3rd pressure hPa : 670

Rack travel in m: 14.00...14.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/ : 132.0...135.0

1000 s; (129.5...137.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 13.30

Speed rpm : 980...990

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 160.0...190.0 1000 s: (156.0...194.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Note remarks

: VOL 10,0 y4 Test sheet : 28.03.91 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 846 857

Injection pump

Pump designation: PE6P110A320RS3080-1

EP type number : 0 411 816 734

Governor

Governor design. : RQV250...950PA921-8

: D 421 813 791 Governer no.

Customer-spec. information

Customer : VOLVO-TRUCK

Engine : TD102FBQ

1st version kW : 228.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Lenath mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.00...3.10 : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 14.30...14.40

Del.quantity cm3/: 19.9...20.1

100 s: (19.6...20.4)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.0 2nd speed Rack travel in mm : 3.8...4.0 Del.quartity cm3/ : 1.5...1.9 100 s: (1.2...2.1)

cm3 : 0.3Spread 100 s: (0.6)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 1.00...1.40 travel mm rpm : 350 2nd speed

: 2.20...2.80 travel mm

3rd speed rpm : 750

travel mm : 6.30...6.70

4th speed rpm : 985

: 8.20...8.40 travel mm

5th speed rpm : 1060

travel mm : 9.10...9.50

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 985

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Aneroid pressure h: 900

: 199.0...201.0 Del.quantity 1000 : (196.0...204.0)

C24

Spread

cm3 : 4.00 1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 116...124

Testing:

1st rack travel in: 13.30 Speed rpm : 980...990

2nd rack travel in: 4.00

rpm : 1050...1080 Speed

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 59...67

Testing:

Speed rpm : 10G Minimum rack trave: 5.30

Speed rpm : 250 Rack travel in mm : 3.80...4.00

CONSTANT REGULATION

rpm : 250...360 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm

Pressure hPa : 900

Rack travel mm : 14.30...14.40

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.80...11.00 2nd pressure hPa : 110 Rack travel in m: 11.10...11.20

3rd pressure hPa : 670

Rack travel in m: 14.00...14.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm: 700 Del.quantity cm3/: 132.0...135.0 1000 s: (129.5...137.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 13.30

rpm : 980...990 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 160.0...190.0 1000 s: (156.0...194.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 3.80...4.00 Del.quantity cm3/: 15.0...19.0 1000 s: (12.5...21.5) Spread cm3 : 3.00 1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

#### Note remarks

: VOL 10,0 y5 Test sheet Edition : 28.03.91

Replaces

: ISO-4113 Test oil

Combination no. : 0 401 846 866

Injection pump

Pump designation : PE6P110A320RS3080 : 0 411 816 722 EP type number

Governor

Governor design. : RQV250...850PA921-1

: 0 421 813 784 Governer no.

Customer-spec. information Customer : VOLVO

: TD102FG0 Engine

: 205.5 1st version kW : 1700 Rated speed

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

: 172...175 pressure, bar

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm : (2.95...3.15)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 13.70...13.80

Del.guantity cm3/: 18.5...18.7

100 s: (18.2...19.0)

cm3 : 0.4Spread

100 s: (0.7)

rpm : 250.0 2nd spred Rack travel in mm: 3.8...4.0

Del.quantity cm3/: 1.5...1.9 100 s: (1.2...2.1)

cm3 : 0.3Spread 100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.00...1.40 travel mm

rpm : 350 2nd speed

: 2.20...2.80 travel mm

3rd speed rpm : 700

: 6.40...6.60 travel mm

rpm : 850 4th speed : 6.70...6.90 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 935 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed Aneroid pressure h: 900

Del.quantity : 103.0...190.0)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 111...119

Testina:

1st rack travel in: 12.70

rpm : 890...900 Speed

2nd rack travel in: 4.00

Speed rpm: 955...985 4th rack travel in: 1100 Speed rpm: 0.00...1.00

LOW IDLE 1

Control Lever

position degrees: 58...66

Testina:

Speed rpm : 100

Minimum rack trave: 5.40
Speed rpm : 250
Rack travel in mm : 3.80...4.00
Rack travel in mm : 2.00

: 285...345 Speed rom

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 500 rpm

hPa : 900 Pressure

: 13.70...13.80 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.80...11.00 2nd pressure hPa : 530 Rack travel in m: 13.50...13.60 3rd pressure hPa : 120

Rack travel in m: 11.10...11.30

FUEL DELIVER CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700 pel.quantity cm3/: 132.0...135.0

1000 s: (129.5...137.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.70

rpm : 890...900 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 160.0...190.0 1000 s: (160.0...190.0) Rack travel in mm: 19.50...21.00

LOW IDLE

Speed rpm : 250

Rack travel in mm : 3.80...4.00

Del.quantity cm3/: 15.0...19.0 1000 s: (12.5...21.5) Spread cm3 : 3.00 1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension =

2.40...2.60 mm.

Note remarks

Test sheet : VOL 10,0 y6 Edition : 28.03.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 867

Injection pump

Pump designation : PE6P110A320RS3080 EP type number : 0 411 816 722

Governor

: RQV250...1050PA921-Governor design.

14

Governer no. : 0 421 813 797

Customer-spec. information Customer : VOLVO

Engine : TD102FCQ

1st version kW : 220.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm

: (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 18.5...18.7

100 s: (18.2...19.0)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 250.0 2nd speed

Rack travel in mm : 3.8...4.0 Del.quantity cm3/ : 1.5...1.9

100 s: (1.2...2.1) cm3 : 0.3Spread

100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

travel mm : 1.00...1.40

2nd speed : 550 rom travel mm

: 4.90...5.50 3rd speed : 700 rom

: 6.40...6.60 travel mm

4th speed : 1050 rpm

travel mm : 7.20...7.40

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1120 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 185.0...187.0

1000 : (182.0...190.0)

: 4.00 Spread cm3 1000 : (7.50) RATED SPEED

1st version

Control Lever

position degrees: 114...122

Testing:

1st rack travel in: 12.70

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rom : 1155...1185

4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 59...67

Testing:

Speed : 100 rpm

Minimum rack trave: 5.40 rpm : 250 Speed

Rack travel in mm : 3.80...4.00

Rack travel in mm: 2.00

rpm : 300...360 Speed

Aneroid/Altitude Compensator Test

1st version

Settina

: 500 Speed CDM hPa : 900 Pressure

Rack travel mm : 13.70...13.80

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 10.30...10.50

2nd pressure hPa : 610

Rack travel in m: 13.50...13.60

3rd pressure hPa : 120

Rack travel in m: 10.60...10.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 700 Del.quantity cm3/ : 119.0...122.0

1000 s: (116.5...124.5)

BREAKAWAY

1st version

001

1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 160.0...190.0

1000 s: (160.0...190.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 3.80...4.00
Del.quantity cm3/ : 15.0...19.0

1000 s: (12.5...21.5)

Spread cm3 : 3.00

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Note remarks

: VOL 10,0 z3 Test sheet Edition : 28.03.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 868

Injection pump

Pump designation: PE6P120A320RS3186 EP type number : 0 411 826 756

Governor

Governor design. : RQV250...950PA921-6

: D 421 813 789 Governer no.

Customer-spec. information Customer : VOLVO

Engine : TD102FF

1st version kW : 230.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.60...2.70 : (2.55...2.75)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 11.40...11.50

Del.quantity cm3/: 19.7...19.9

100 s: (19.4...20.2)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm : 3.9...4.1 Del.quantity cm3/ : 1.7...2.2 100 s: (1.4...2.4)

cm3 : 0.5100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

Spread

1st speed 250 mom :

1.00...1.40 travel mm 350 2.20...2.80 2nd speed rpm

travel mm 700

3rd speed rpm 6.40...6.60 travel mm

985 4th speed rpm

: 8.20...8.40 travel mm

5th speed : 1060 rom : 9.60...10.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1000 Speed

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700 Aneroid pressure h: 1000 : 5.00 Spread cm31000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 114...122

Testing:

1st rack travel in: 10.40 rpm : 980...990 Speed 2nd rack travel in: 4.00

rpm : 1040...1070 Speed

4th rack travel in: 1200

rom : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 59...67

Testing:

Speed : 100 rpm Minimum rack trave: 5.40 rpm : 250 Speed

Rack travel in mm : 3.90...4.10

CONSTANT REGULATION

rpm : 250...360 Speed

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 1000 Pressure

Rack travel mm : 11.40...11.50

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.80...9.00

2nd pressure hPa : 80

Rack travel in m: 9.20...9.30 3rd pressure hPa : 400

Rack travel in m: 11.10...11.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -: 700 Speed rpm

Del.quantity cm3/: 143.0...145.0 1000 s: (140.0...148.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.40

rpm : 980...990 Speed

LOW IDLE

Speed rpm : 250 Rack travel in mm : 3.90...4.10

Del.quantity cm3/: 17.0...22.0 1000 s: (14.5...24.5) Spread cm3 : 5.00 1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

BOSCH INJ. PUMP TEST SPECIFICATIONS : 2.60...2.70 Prestroke mm : (2.55...2.75) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order Test sheet : VOL 12,2 i1 Edition : 28.03.91 Replaces Test oil : ISO-4113 : 0-60-120-180-240-300 Phasing Combination no. : 0 401 846 869 Tolerance  $+ - \cdot : 0.50 (0.75)$ Injection pump Time to cyl. no. : 1 Pump designation : PE6P120A320RS3118 EP type number : 0 411 826 726 BASIC SETTING Governor Governor design. : RQV250...1100PA920-5 1st speed rpm: 700 Governer no. : 0 421 813 782 Rack travel in mm : 12.70...12.80 Customer-spec, information Customer Del.quantity cm3/: 22.2...22.4 : VOLVO Engine : THD 102 KD 100 s: (21.9...22.7) : 250.0 1st version kW cm3 : 0.5Spread : 2200 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 250.0Rack travel in mm : 4.3...4.5 Del.quantity cm3/ : 2.7...3.3 Test oil inlet temp. °C : 38...42 100 s: (2.4...3.6) Overfrow valve cm3 : 0.5Spread : 1 417 413 025 100 s: (0.7) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL 1st speed rom : 250 1.10...1.30 Openina travel mm pressure, bar : 207...210 2nd speed : 500 **LIDUL** : 4.10...4.90 travel mm Orifice plate 3rd speed : 700 rpm diameter mm : 0,8 : 6.30...6.70 travel mm : 950 4th speed rpm travel mm : 6.30...6.70 Test Lines : 1 680 750 067 1100 5th speed rom travel mm : 7.00...7.50 Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00x1.50x1000 Control-lever position Degree: -1 (A) Injection pump setting values Speed rpm : 1175 Insp. values in parentheses Rack travel in mm : 15.20...17.80 Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version

rpm : 700

Aneroid pressure h: 1200

Speed

Test pressure, bar: 25...27

Del.quantity : 222.0...227.0)

: 5.00 cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 112...120

Testing:

1st rack travel in: 11.70

Speed rpm : 1130...1140

2nd rack travel in: 4.00

rpm : 1210...1240 Speed

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 63...71

Testing:

Speed : 100 rpm Minimum rack trave: 5.90 Speed rpm : 250 Rack travel in mm : 4.30...4.50

CONSTANT REGULATION

Speed rpm : 250...420

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 hPa : 1200 Speed rpm Pressure

: 12.70...12.80 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 8.30...8.50

2nd pressure hPa : 700
Rack travel in m: 12.50...12.60
3rd pressure hPa : 120

Rack travel in m: 9.00...9.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 700 Speed

Del.quantity cm3/: 131.0...133.0 1000 s: (128.0...136.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.70

rpm : 1130...1140 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 230.0...270.0 1000 s: (225.0...275.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 4.30...4.50 Del.quantity cm3/: 27.0...33.0 1000 s: (24.0...36.0) Spread cm3 : 5.00 1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Note remarks

Test sheet : VOL 10,0q22 Edition : 28.03.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 846 883

Injection pump

Pump designation : PE6P110A320RS3108-1

EP type number : 0 411 816 757

Governor

Governor design. : RQV250...1100PA920-4

: 0 421 813 781 Governer no.

Customer-spec. information Customer : VOLVO

: THD 102 KB Engine

: 212.0 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm

: (2.95...3.15) Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.90...14.00

Del.quantity cm3/: 18.3...18.5

100 s: (18.0...18.8)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 250.02nd speed Rack travel in mm : 5.6...5.8 Del.quantity cm3/: 3.0...3.4

100 s: (2.7...3.6)

cm3 : 0.3 Spread 100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.10...1.30 travel mm 2nd speed rpm : 500

travel mm

: 4.10...4.90 rpm : 700 3rd speed

travel mm : 6.30...6.70

950 4th speed man

: 6.30...6.70 : 1100 travel mm

5th speed rom

: 7.00...7.50 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1175 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Aneroid pressure h: 1200

: 183.0...185.0 Del.quantity

1000 : (180.0...188.0)

Spread cm3 : 4.00 1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 60...68

Testing:

1st rack travel in: 12.90 rpm : 1130...1140 Speed

2nd rack travel in: 4.00

Speed rpm : 1215...1245 4th rack travel in: 1350 Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 7...15

Testing:

Speed : 100 rom Minimum rack trave: 7.20 rpm : 250

Rack travel in mm : 5.60...5.80

CONSTANT REGULATION

Speed rpm : 250...425

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 1200 Pressure

Rack travel mm : 13.90...14.00

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.20...10.40

2nd pressure hPa : 240
Rack travel in m: 10.40...10.50
3rd pressure hPa : 800
Rack travel in m: 13.30...13.50

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm : 700 Speed

Del.quantity cm3/: 111.5...114.5

1000 s: (109.0...117.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.90

Speed rpm : 1130...1140

STARTING FUEL DELIVERY

LOW IDLE

Speed rpm : 250

Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 30.0...34.0

1000 s: (27.5...36.5)

cm3 : 3.00 Spread

1000 s: (6.00)

Remarks:

On activation of the starting solenoid, the start position must be reached.

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

007

Note remarks

Test sheet : VOL 10,0 y7 : 28.03.91 **Edition** 

Replaces

: ISO-4113 Test oil

: 0 401 846 890 Combination no.

Injection pump

Pump designation : PE6P110A320RS3080-3

EP type number : 0 411 816 758

Governor

: RQV250...950PA921-15 Governor design.

: 0 421 813 798 Governer no.

Customer-spec, information : VOLVO Customer

Engine : TD102FH

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm

: (2.95...3.15)

Rack travel in mm: 9.00...12.00

Firing order: 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 17.9...18.1

100 s: (17.6...18.4)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0

Rack travel in mm: 3.8...4.0 Del.quantity cm3/: 1.5...1.9

100 s: (1.2...2.1) cm3 : 0.3

Spread 100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

travel mm : 1.00...1.40 2nd speed

rpm

350 2.20...2.80 travel mm

3rd speed rpm : 750

: 6.30...6.70 travel ma

4th speed : 985 man

travel mm : 8.20...8.40

5th speed : 1060 rpm

travel mm : 9.10...9.50

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 985 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

Aneroid pressure h: 900

: 179.0...181.0 Del.quantity

1000 : (176.0...184.0)

: 4.00 Spread cm3

1000 : (7.50)

RATED SPEED

1st version Control Lever

position degrees: 116...124

Testing:

1st rack travel in: 11.60 Speed rpm : 980...990 2nd rack travel in: 4.00

rpm : 1040...1070 Speed

4th rack travel in: 1200

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 59...67

Testing:

Speed : 100 rom. Minimum rack trave: 5.30 Speed rpm : 250

Speed rpm : 250 Rack travel in mm : 3.80...4.00

CONSTANT REGULATION

: 250...360 Speed man

Aneroid/Altitude Compensator Test

1st version Setting

rpm : 500 hPa : 900 Speed man Pressure

Rack travel mm : 12.60...12.70

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 9.90...10.10

2nd pressure hPa : 125

Rack travel in m: 10.20...10.30 3rd pressure hPa : 490

Rack travel in m: 12.20...12.40

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -: 700 Speed rpm

Del.quantity cm3/: 129.5...132.5 1000 s: (127.0...135.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.60 rpm : 980...990 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 160.0...190.0

1000 s: (156.0...194.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250
Rack travel in mm : 3.80...4.00
Del.quantity cm3/ : 15.0...19.0
1000 s: (12.5...21.5)
Spread cm3 : 3.00

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

### Note remarks

: DAF 8,3 p 7 : 28.03.91 Test sheet Edition : 14.9.90 Replaces Test oil : ISO-4113

Combination no. : 0 401 846 899

Injection pump

Pump designation : PE6P110A720RS3225 EP type number : 0 411 816 763

Governor

Governor design. : RQ275/1200PA913-1 : 0 421 801 549 Governer no.

Customer-spec. information Customer : DAF

Engine : HS 200

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening 1

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.70...3.80 Prestroke mm : (3.65...3.85)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm : 12.50...12.60

Del.quantity cm3/: 12.4...12.6

100 s: (12.1...12.8)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 275.0 2nd speed Rack travel in mm: 7.2...7.4 Del.quantity cm3/: 1.4...1.9

100 s: (1.1...2.1)

cm3 : 0.4Spread 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 550 Speed

Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1000

Del.quantity : 724.0...128.5)

1000 : (7.50)

RATED SPEED

1st version

Setting point:

Rack travel in mm: 15.8

Testing:

1st rack travel in: 11.50

rpm : 1235...1250 Speed 2nd rack travel in: 4.00

rpm : 1320...1350 Speed 4th rack travel in: 1450

rpm : 0.00...1.40Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 275 Rack travel in mm : 4.8 Testina: Speed rpm : 100 Minimum rack trave: 6.70 Speed **rpm** : 275 Rack travel in mm : 4.70...4.90 Rack travel in mm : 2.00 Speed rpm : 340...380 TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 13.50...13.60 2nd speed rpm : 1200 Rack travel in m: 13.40...13.60 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 1000 mm : 12.50...12.60 Pressure Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 10.90...11.10 2nd pressure hPa : 360 Rack travel in m: 12.10...12.20 3rd pressure hPa : 270 Rack travel in m: 11.40...11.60 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 600 Speed Del.quantity cm3/: 87.0...89.0 1000 s: (84.5...91.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.50 rpm : 1235...1250 Speed LOW IDLE

Rack travel in mm : 4.70...4.90 Remarks:

Speed : 275 rpm

D11

Note remarks

Test sheet : VOL 12,2 d : 22.03.91 Edition Replaces : 14.9.90 Test oil : ISO-4113

Combination no. : 0 401 846 900

Injection pump

Pump designation : PE6P120A320RS3240 EP type number : 0 411 826 786

Governor

Governor design. : RQV250...1025PA921-

16

: 0 421 813 799 Governer no.

Customer-spec. information

Customer : VOLVO-TRUCK

Engine : TD122FL

: 298.0 1st version kW : 2050 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. Values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 13.60...13.70

Del.quantity cm3/: 25.1...25.3

100 s: (24.8...25.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0Rack travel in mm: 6.5...6.7 Del.quantity cm3/: 1.7...2.2

100 s: (1.5...2.5)

Spread cm3 : 0.5100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

1.00...1.40 travel mm

rpm : 450 2nd speed

: 3.60...4.20 travel mm

3rd speed rpm : 800 travel mm

: 6.30...6.70 4th speed rpm : 1070

: 8.00...8.20 travel mm

rpm : 1150 5th speed

: 9.30...9.70 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

012

Aneroid pressure h: 1200

: 251.0...253.0 Del.quantity

1000 : (248.0...256.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 12.60 Speed rpm : 1065...1075

2nd rack travel in: 4.00

rpm : 1140...1170 Speed

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 60...68

Testing:

Speed : 100 rom Minimum rack trave: 8.10 rpm : 250 Speed

Rack travel in mm : 6.50...6.70

CONSTANT REGULATION

rpm : 250...380 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed man hPa : 1200 Pressure

Rack travel mm : 13.60...13.70

Measurement

1/min: 500 Speed

1st pressure hPa :-

Rack travel in m: 9.60...9.80

2nd pressure hPa : 85

Rack travel in m: 9.80...9.90

3rd pressure hPa : 800

Rack travel in m: 13.00...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 700 Speed

Del.quantity cm3/: 154.0...156.0 1000 s: (151.0...159.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 12.60 Speed rpm : 1065...1075 Speed

STARTING FUEL DELIVERY

rpm\_ : 100 Speed

Del.quantity cm3/: 270.0...310.0

1000 s: (266.0...314.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 6.50...6.70 Del.quantity cm3/: 17.5...22.5 1000 s: (15.0...25.0) Spread cm3 : 5.00 1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Start-of-delivery setting with ROBO

diaphragm.

Prestroke mm : 2.80...2.90 : (2.75...2.95) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : VOL 12,2 d1 : 22.03.91 Test sheet Edition Replaces : 14.9.90 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 401 846 901 Tolerance + - ° : 0.50 (0.75)Injection pump Time to cyl. no. : 1 Pump designation : PE6P120A320RS3240-1 EP type number : 0 411 826 787 BASIC SETTING Governor Governor design. : RQV250...950PA921-17 1st speed rpm: 700 Governer no. : 0 421 813 800 Rack travel in mm : 12.70...12.80 Customer-spec. information Customer : VOLVO-TRUCK Del.quantity cm3/: 22.3...22.5 Engine : TD122FH 100 s: (22.0...22.8) : 269.0 1st version kW cm3 : 0.5Spread Rated speed : 1900 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 250.0 2nd speed Test oil Rack travel in mm: 6.5...6.7 Del.quantity cm3/: 1.7...2.2 100 s: (1.5...2.5) inlet temp. °C : 38...42 Overflow valve Spread cm3 : 0.5: 1 457 413 010 100 s: (0.7) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL rpm : 250 1st speed Openina : 1.00...1.40 travel mm : 207...210 pressure, bar 2nd speed rpm : 350 travel mm : 2.20...2.80 Orifice plate 3rd speed : 750 rpm : 6.30...6.70 diameter mm : 0,8 travel mm 995 4th speed rpm : 8.20...8.40 travel mm Test lines : 1 680 750 067 5th speed 1060 rpm : 9.30...9.70 travel mm Outside diameter x Wall thickness GUIDE SLEEVE POSITION x Length mm : 6.00x1.50x1000 Control-lever position Degree: -1 rpm : 1010 (A) Injection pump setting values Speed Insp. values in parentheses Rack travel in mm : 15.20...17.80 Set equal delivery quant. per values FULL LOAD DELIV. AT FULL LOAD STOP BEGINNING OF DELIVERY 1st version Test pressure, bar: 25...27 Speed rpm : 700

Aneroid pressure h: 900

Del.quantity : 223.0...225.0

1000 : (220.0...228.0)

cm3 : 5.00Spread 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 116...124

Testing:

1st rack travel in: 11.70 rpm : 990...1000 Speed

2nd rack travel in: 4.00

Speed rpm : 1050...1080

4th rack travel in: 1200

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 60...68

Testina:

Speed rpm : 100 Minimum rack trave: 8.10 rpm : 250 Speed

Rack travel in mm : 6.50...6.70

CONSTANT REGULATION

Speed rpm : 250...380

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 mon hPa : 900 Pressure

: 12.70...12.80 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 9.60...9.80

2nd pressure hPa : 85

Rack travel in m: 9.80...9.90

3rd pressure hPa : 470

Rack travel in m: 12.10...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm\_ : 700 Speed

Del.quantity cm3/: 154.0...156.0

1000 s: (151.0...159.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.70

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 270.0...310.0 1000 s: (266.0...314.0) Rack travel in mm: 20.00...21.00

LOW IDLE

rpm : 250 Speed

Rack travel in mm : 6.50...6.70 Del.quantity cm3/: 17.5...22.5

1000 s: (15.0...25.0)

cm3 : 5.00 Spread

1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Permissible alteration from 2.20...2.90

Start-of-delivery setting with ROBO diaphragm.

**D15** 

#### Note remarks

: DAF 8,3 p 9 : 28.03.91 Test sheet Edition : 14.9.90 Replaces Test oil : ISO-4113

Combination no. : 0 401 846 905

Injection pump

Pump designation : PE6P110A720RS3225Z EP type number : 0 411 816 762

Governor

Customer

Governor design. : RQ275/1200PA913-1 Governer no. : 0 421 801 549

: DAF

Customer-spec. information

: HT 168 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.70...3.80 Prestroke mm : (3.65...3.85)

Rack travel in mm : 9.00...12.00

: 1-5- 3- 6- 2-Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - " : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 12.0...12.2

100 s: (11.7...12.4)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 275.0
Rack travel in mm : 7.2...7.4
Del.quantity cm3/ : 1.4...1.9
100 s: (1.1...2.1)

cm3 : 0.4Spread 100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 550

Speed Rack travel in mm: 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000 Aneroid pressure h: 1000

Del.quantity : 120.0...122.0 1000 : (117.5...124.5)

: 4.00 Spread cm3 1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 550 Rack travel in mm: 15.8

Testina:

1st rack travel in: 11.30

rpm : 1235...1250 Speed

2nd rack travel in: 4.00

rpm : 1320...1350 Speed

4th rack travel in: 1400

Speed : 0.00...1.40 rpm

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm Rack travel in mm: 4.8 Testing: rpm Speed : 100 Minimum rack trave: 8.00 Speed rpm: 275
Rack travel in mm: 4.70...4.90 Rack travel in mm : 2.00 rpm : 340...380 Speed TORQUE CONTROL Dimension a mm Torque control curve - 1st version 1st speed rpm : 1000 Rack travel in m: 13.30...13.40 2nd speed rpm : 1200 Rack travel in m: 13.20...13.40 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm Pressure hPa : 1000 Rack travel mm : 12.30...12.40 Measurement Speed 1/min : 600 1st pressure hPa : -Rack travel in m: 10.80...10.90 2nd pressure hPa : 400 Rack travel in m: 12.00...12.10
3rd pressure hPa : 320
Rack travel in m: 11.50...11.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: -Speed rpm : 600 Del.quantity cm3/: 83.5...85.5 1000 s: (81.0...88.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.30 rpm : 1235...1250 Speed LOW IDLE

: 275

rpm

Rack travel in mm : 4.70...4.90
Remarks:

D17

Speed

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : VOL 12,2 i Edition : 19.03.91 Replaces : 16.11.90 : ISO-4113 Test oil Combination no. : 0 401 846 923 Injection pump Pump designation : PE6P120A320RS3118 EP type number : 0 411 826 726 Governor Governor design. : RQV250...1100PA920-6 Governer no. : 0 421 813 872 Customer-spec. information Customer : VOLVO-TRUCK Engine : THD 102 KD : 250.0 1st version kW : 2200 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 019 assembly **Opening** : 207...210 pressure, bar Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness x Length mm : 6.00X1.50X1000 (A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.60...2.70 : (2.55...2.75) Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Phasing : 0.50 (0.75) Tolerance + - ° Time to cyl. no. : 1 BASIC SETTING rpm: 700 1st speed Rack travel in mm : 13.10...13.20 Del.quantity cm3/: 21.7...21.9 100 s: (21.4...22.2) cm3 : 0.5Spread 100 s: (0.9) 2nd speed rpm : 250.0 Rack travel in mm: 5.1...5.3 Del.quantity cm3/: 2.9...3.5 100 s: (2.6...3.8) Spread cm3 : 0.5 100 s: (0.7) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 250 1st speed : 1.00...1.40 travel mm : 500 2nd speed rpm : 4.10...4.70 travel mm 3rd speed : 800 rpm : 6.30...6.70 travel mm 4th speed : 1140 rpm 7.70...7.90 travel mm : 1230 5th speed rpm travel mm : 9.00...9.40 GUIDE SLEEVE POSITION Control-Lever position Degree: -1 rpm : 1175 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 700

Aneroid pressure h: 1200

Prestroke mm

Del.quantity : 217.0...222.0)

: 5.00 cm31000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 113...121

Testing:

1st rack travel in: 12.10

Speed rpm : 1130...1140

2nd rack travel in: 4.00

rpm : 1210...1240 Speed

4th rack travel in: 1350

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 60...68

Testing:

Speed mari : 100 Minimum rack trave: 6.60 : 250 Speed rpm

Rack travel in mm : 5.10...5.30

CONSTANT REGULATION

rpm : 250...400 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rpm Pressure hPa : 1200

: 13.10...13.20 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.00...9.20

2nd pressure hPa : 230

Rack travel in m: 9.40...9.50

3rd pressure hPa : 825

Rack travel in m: 12.70...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: rpm\_ : 700 Speed

Del.quantity cm3/: 133.0...135.0

1000 s: (130.0...138.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 12.10

Speed rpm : 1130...1140

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 230.0...270.0 1000 s: (225.0...275.0) Rack travel in mm: 20.00...21.00

LOW IDLE

Speed rpm : 250 Rack travel in mm : 5.10...5.30

Del.quantity cm3/: 29.0...35.0 1000 s: (26.0...38.0)

Spread cm3 : 5.00

1000 s: (7.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

## Note remarks

Test sheet : HAE 12.0 a Edition : 28.03.91 : 20.12.90 Replaces Test oil : ISO-4113

: 0 401 846 933 Combination no.

Injection pump

Pump designation : PE6P110A320RS3260 : 0 411 816 775 EP type number

Governor

Governor design. : RQ250/1050PA969 : 0 421 801 538 Governer no.

Customer-spec. information Customer : HAEP

: X6130 NA Engine

# TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.60...3.70 : (3.55...3.75) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

#### BASIC SETTING

1st speed rpm: 1035

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 11.8...12.1

100 s: (11.5...12.3)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 250.0 Rack travel in mm : 7.9...8.3 Del.quantity cm3/: 1.5...2.0

100 s: (1.2...2.2)

Spread cm3 : 0.4100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position Degree: -2

rpm : 500 Speed

Rack travel in mm : 12.40...14.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1035 Speed

: 118.0...121.0 Del.quantity 1000 : (115.5...123.5)

: 4.00 cm3 Spread

1000 : (7.50)

#### RATED SPEED

# 1st version

Setting point:

Speed r pm Rack travel in mm: 13.2

Testing:

1st rack travel in: 10.10 Speed rpm : 1085...1100 2nd rack travel in: 4.00

rpm : 1110...1140 Speed 4th rack travel in: 1250

rpm : 0.00...1.80Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm : 8.1

Testing:

Sper 1 rpm : 100 Minimum rack trave: 9.60

Speed rpm : 250 Rack travel in mm : 8.00...8.20

Rack travel in mm : 2.00

rpm : 295...335 Speed

TORQUE CONTROL

Dimension a mm : 0.30

Torque control curve - 1st version

1st speed rpm : 1035
Rack travel in m: 11.10...11.20

2nd speed rpm : 600 Rack travel in m: 11.70...11.90

3rd speed rpm : 760

Rack travel in m: 11.60...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600 Del.quantity cm3/: 117.0...122.0 1000 s: (114.0...125.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 10.10

rpm : 1085...1100 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 180.0...200.0 1000 s: (176.0...204.0)

Remarks:

Note remarks

Test sheet : VOL 10,2 b : 19.03.91 : 23.11.90 Edition Replaces Test oil : ISO-4113

Combination no. : 0 401 846 939

Injection pump

Pump designation: PE6P110A320RS3265 EP type number : 0 411 816 778

Governor

Governor design. : RQV300...1050PA232-5

: 0 421 813 895 Governer no.

Customer-spec. information Customer : VMF

Engine : TD102KCE

1st version kW : 180.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

**Opening** 

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm : (2.95...3.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 15.2...15.4

100 s: (14.9...15.7)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0Rack travel in mm: 4.8...5.0

Del.quantity cm3/: 1.9...2.3

100 s: (1.7...2.5) cm3 : 0.3Spread

100 s: (0.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

travel mm : 1.30...1.70

2nd speed : 450 rpm

travel mm : 2.40...3.00

3rd speed : 700 rpm

travel mm : 4.30...4.90

4th speed : 1100 rpm

travel mm : 7.80...8.00

5th speed : 1200 man

: 8.80...9.20 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1170

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 700

Del.quantity : 152.0...154.0 1000 : (149.0...157.0)

**D22** 

cm3 : 4.50 Spread 1000 : (7.50)

RATED SPEED

1st version Control Lever

position degrees: 113...121

Testing:

1st rack travel in: 11.20 rpm : 1090...1100 Speed 2nd rack travel in: 4.00

rpm : 1185...1215 Speed

4th rack travel in: 1300

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever

position degrees: 82...90

Testina:

Speed : 100 rom Minimum rack trave: 6.50 rpm : 300 Speed

Rack travel in mm : 4.80...5.00

CONSTANT REGULATION

rpm : 300...410 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 500 Pressure hPa : 700

Rack travel mm : 12.20...12.30

Measurement

Speed  $1/\min : 500$ 

1st pressure hPa : -

Rack travel in m: 10.30...10.50

2nd pressure hPa : 130

Rack travel in m: 10.80...10.90 3rd pressure hPa : 250 Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 : 1050 Speed rpm

Del.quantity cm3/: 138.0...142.0 1000 s: (136.0...144.0)

Aneroid pressure h: -

rpm : 700 Speed

Del.quantity cm3/: 116.0...118.0

1000 s: (113.0...121.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.20

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 160.0...190.0 1000 s: (156.0...194.0) Rack travel in mm: 20.00...21.00

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 19.0...23.0

1000 s: (17.0...25.0)

cm3 : 3.00 Spread

1000 s: (6.00)

Remarks:

Delivery-valve spring pre-tension = 2.40...2.60 mm.

Note remarks

Test sheet : MB 11,0 w 1
Edition : 19.03.91
Replaces : 18.1.91
Test oil : ISO-4113

Combination no. : 0 401 846 943

Injection pump

Pump designation : PE6P110A320LS3851 EP type number : 0 411 816 765

Governor

Governor design. : RQV300...1050PA884-9

Governer no. : 0 421 813 912

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M441

1st version kW : 151.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

assembly : 1 688 901 101

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.40...4.50 : (4.35...4.55)

Rack travel in mm : 9.00...12.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ}$ : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 11.00...11.10

Del.quantity cm3/: 11.8...12.0

100 s: (11.5...12.2)

Spread cm3: 0.8

100 s: (1.3)

2nd speed rpm : 300.0

Rack travel in mm : 6.5...7.1 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.4)

Spread cm3 : 0.6 100 s: (1.1)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 0.50...1.00

2nd speed rpm: 460

travel mm : 2.70...3.20

3rd speed rpm: 730

travel mm : 4.70...5.20

4th speed rpm : 1107

travel mm : 7.90...8.40

5th speed rpm : 1370

travel mm : 11.00...12.00

GUIDE SLEEVE POSITION

Control-Lever position
Degree: -1

peed rpm: 1100

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050

Del.quantity : 118.0...120.0

1000 : (115.5...122.5)

: 8.50 Spread cm3 1000 : (13.00)

RATED SPEED

1st version Control Lever

position degrees: 114...122

Testing:

1st rack travel in: 10.00

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

Speed rpm : 1170...1200

4th rack travel in: 1350

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 83...91

Testing:

Speed : 200 rpm Minimum rack trave: 8.40 rpm : 300 Speed

Rack travel in mm : 6.50...7.10

Rack travel in mm: 2.00

: 300...500 Speed rom

CONSTANT REGULATION

rpm : 300...500 Speed

START CUT-OUT

1/min: 5220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600 Del.quantity cm3/ : 117.0...122.0

1000 s: (114.0...125.0)

cm3 : 11.00 Spread

1000 s: (14.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.00

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (126.0...154.0)

Remarks:

## Note remarks

: DAO 18,1 a Test sheet : 01.03.91 Edition : 7.1.91 Replaces Test oil : ISO-4113

Combination no. : 0 401 849 184

Injection pump

Pump designation : PE10P110A520/5LS858

EP type number : 0 411 819 022

Governor

Governor design. : RQ900PA988 : 0 421 801 573 Governer no.

Customer spec. information Customer : DAEWOO

# TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.00...3.10 Prestroke mm : (2.95...3.15)

Rack travel in mm : 9.00...12.00 Firing order : 10-9-4-1-8-7-

6-3-5-2

: 0-45-72-117-144-189-216-261-288-333 Phasing

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 10

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm: 11.10...11.20

Del.quantity cm3/: 15.3...15.6

100 s: (15.0...15.8)

cm3 : 0.4Spread

100 s: (0.8)

rpm : 250.0 2nd speed

Rack travel in mm : 3.5...3.9 Del.quantity cm3/ : 1.1...1.6 100 s: (0.8...1.8)

Spread

cm3 : 0.4 100 s: (0.7)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

: 153.0...156.0 Del.quantity 1000 : (150.5...158.5)

cm3 : 4.00 Spread

1000 : (8.00)

RATED SPEED

1st version

Testing:

1st rack travel in: 10.10 rpm : 900...905 Speed

2nd rack travel in: 4.00 rpm : 932...946 Speed

4th rack travel in: 1000

rpm : 0.00...1.00 Speed

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.10

: 900...905 Speed man

Remarks:

Note remarks

Test sheet : KHD 16,0 e : 19.03.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 849 752

Injection pump

Pump designation: PE10P110A920/5LS3276

EP type number

: 0 411 819 712

Governor

Governor design. : RQV300...1150PA997

: 0 421 813 927 Governer no.

Customer-spec, information Customer : KHD

: F 10L513 Engine

1st version kW : 223.0 : 2300 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.10...3.20

: (3.05...3.25)

Rack travel in mm : 9.00...12.00

Firing order : 1- 10- 9- 4- 3- 6-

5-8-7-2

Phasing : 0-27-72-99-144-171-

216-243-288-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 9.90...10.00

Del.quantity cm3/: 10.8...11.0

100 s: (10.5...11.3)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.02nd speed Rack travel in mm: 4.4...4.6

Del.quantity cm3/: 1.2...1.7 100 s: (1.0...2.0)

cm3 : 0.4 100 s: (0.7) Spread

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 2.30...2.70

2nd speed : 450 rpm : 3.40...3.90 travel mm

3rd speed : 800 rpm

: 7.10...7.60 : 1200 travel mm

4th speed rpm

10.10...10.30 travel mm

5th speed : 1300 rpm

travel mm : 11.00...11.40

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1130 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1150 Speed

Del.quantity : 108.0...110.0

1000 : (105.0...113.0)

cm3 : 4.00 1000 : (7.50) Spread RATED SPEED 1st version Control lever position degrees: 116...124 Testing: 1st rack travel in: 8.90 Speed rpm : 1190...1200 2nd rack travel in: 4.00 Speed rpm: 1260...1290 4th rack travel in: 1400 Speed rpm : 0.00...1.00LOW IDLE 1 Control lever position degrees: 80...88 Testing: Speed rpm : 100 Minimum rack trave: 6.10 Speed rpm : 300 Rack travel in mm : 4.40...4.60 CONSTANT REGULATION rpm : 300...420 Speed **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.90 rpm : 1190...1200 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 135.0...165.0 1000 s: (131.0...169.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 4.40...4.60 Del.quantity cm3/: 12.5...17.5 1000 s: (10.0...20.0) Spread cm3 : 4.501000 s: (7.50) Remarks:

Note remarks

Test sheet : MMM 21,6 a5 : 28.03.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 401 870 090

Injectic, pump

Pump designation: PE12P12OA520/5RS428-

EP type number : 0 411 820 034

Governor

Governor design. : RSUV300...1150P0A357

: 0 421 829 104 Governer no.

Customer-spec. information : MMM

Customer

: TBD 234 V 12

TEST BENCH REQUIREMENTS

Test oil

Engine

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

**Opening** 

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.80...2.90 Prestroke mm

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 1- 2- 9- 10- 5- 6- 11- 12- 3- 4- 7- 8

: 0-30-60-90-120-150-180-210-240-270-300-Phasing

330

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 10.10...10.20

Del.quantity cm3/: 17.0...17.4

100 s: (16.7...17.7)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm : 5.6...5.8 Del.quantity cm3/: 2.8...3.6

100 s: (2.5...3.9)

cm3 : 0.8 Spread 100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 7008 : man Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 2.00

RATED SPEED

1st version Control lever

position degrees: 49...57

Testing:

1st rack travel in: 9.10

rpm : 1190...1200 Speed

2nd rack travel in: 4.00

: 1205...1235 Speed rpm

4th rack travel in: 1370

Speed rpm : 0.30...1.70

LCW IDLE 1

Control lever

position degrees: 10...18

Setting point w/out bumper spring

rpm : 300 Speed

Rack travel in mm : 5.2 Minimum rack trave: 19.50

Speed rpm: 300
Rack travel in mm: 5.10...5.30
Rack travel in mm: 2.00
Speed rpm: 350...410

# **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 9.10

Speed rpm : 1190...1200

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 240.0...260.0 1000 s: (236.0...264.0)

### LOW IDLE

Speed rpm : 300
Rack travel in mm : 5.60...5.80
Del.quantity cm3/ : 28.0...36.0
100C s: (25.0...39.0)

Spread cm3 : 8.00

1000 s: (12.00)

## Remarks:

Full-load delivery not known. Set according to engine test report.

Note remarks

: DAF 8,3 o16 Test sheet Edition : 28.03.91

Replaces

Test oil : ISO-4113

Combination no. : 0 401 876 342

Injection pump

Pump designation : PE6P100A720RS447-1 EP type number : 0 411 806 195

Governor

Governor design. : RSV250...750P7A507-2

: 0 421 833 353 Governer no.

Customer-spec, information Customer : DAF

Engine : DHT 825

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.20...3.30 Prestroke mm

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - \* : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 12.70...12.80

Del.guantity cm3/: 14.2...14.4

100 s: (14.0...14.6)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 250.0 2nd speed Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 142.0...144.0 Del.quantity 1000 : (140.0...146.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 92...100

Testing:

1st rack travel in: 11.70 rpm : 750...755 Speed 2nd rack travel in: 4.00 rpm : 780...795 Speed

4th rack travel in: 950

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever position degrees: 67...75

Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm : 5.4

Speed rpm : 250
Rack travel in mm : 5.30...5.50
Rack travel in mm : 2.00

rpm : 250...290 Speed

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

# **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 11.70 rpm : 750...755 Speed

# LOW IDLE

Speed rpm : 250
Rack travel in mm : 5.30...5.50
Del.quantity cm3/ : 9.0...13.0 1000 s: (6.5...15.5) cm3 : 3.50

Spread

1000 s: (5.50)

Remarks:

### **APPLICATION**

Generator

Note remarks

Test sheet

: DAF 11,7 b1

Edition Replaces : 18.02.91

Test oil

: ISO-4113

Combination no. : 0 401 876 343

Injection pump

Pump designation: PE6P120A320RS500

EP type number

: 0 411 826 140

Governor

Governor design. : RSV250...750P7A507-3

Governer no.

: 0 421 833 358

Customer

Customer-spec. information : DAF

Engine

: DKZ 1160

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 019

**Opening** 

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test Lines

: 1 680 750 067

Outside diameter

x Wall thickness

x Length mm

: 6.00x1.50x1000

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 2.80...2.90

: (2.75...2.95)

Rack travel in mm : 9.00...12.00

E05

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 700

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 24.2...24.4

100 s: (23.9...24.7)

Spread

cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0
Rack travel in mm : 6.7...6.9
Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

Spread

cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 700

Del.quantity

: 242.0...244.0 1000 : (239.0...247.0)

Spread

: 5.00 cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 90...98

Testing:

Speed

1st rack travel in: 12.80 Speed

rpm : 750...755

2nd rack travel in: 4.00

: 780...795 rpm

4th rack travel in: 950 Speed

rom

: 0.30...1.40

LOW IDLE 1 Control lever

control lever
position degrees: 66...74
Setting point w/out bumper spring
Speed rpm : 250
Rack travel in mm : 6.8
Speed rpm : 250
Rack travel in mm : 6.70...6.90
Rack travel in mm : 2.00
Speed rpm : 250...290

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

# **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 12.80 Speed rpm : 750...755

# LOW IDLE

Speed rpm : 250
Rack travel in mm : 6.70...6.90
Del.quantity cm3/ : 14.0...20.0
1000 s: (11.0...23.0)
Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

**APPLICATION** 

Generator

Test sheet Edition

Note remarks

: DAF 8,3 s : 28.03.91

Replaces

Test oil : ISO-4113

Combination no.

: 0 401 876 783

Injection pump

Pump designation : PE6P110A720RS3225 EP type number : 0 411 816 763

Governor

Governor design. : RSV250...750P7A507-2 Governer no. : 0 421 833 353

Customer-spec. information Customer : DAF

Engine

: Hs AG

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.70...3.80

: (3.65...3.85) Rack travel in mm : 9.00...12.00

: 1-5- 3- 6- 2- 4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 700 1st speed

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 12.4...12.6

100 s: (12.2...12.8)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 325.0 Rack travel in mm : 7.4...7.5 Del.quantity cm3/ : 1.3...1.7

100 s: (1.0...1.9)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 124.0...126.0 Del.quantity 1000 : (122.0...128.0)

Spread cm3 : 4.00

1000 : (7.50)

RATED SPEED

1st version

Control lever

position degrees: 89...97

Testing:

1st rack travel in: 11.90

rpm : 750...755 Speed 2nd rack travel in: 4.00

rpm : 780...795 Speed 4th rack travel in: 950

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 68...76

Setting point w/out bumper spring

Speed rpm: 325
Rack travel in mm: 5.3
Speed rpm: 325
Rack travel in mm: 5.20...5.40
Rack travel in mm: 2.00
Speed rpm: 345...385

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

# **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 11.90 rpm : 750...755 Speed

# LOW IDLE

Speed rpm:: 325 Rack travel in mm: 5.20...5.40

Remarks:

# APPLICATION

Generator

### Note remarks

Test sheet : MB 14,6 p 5 Edition : 18.02.91 : 24.5.89 Replaces : ISO-4113 Test oil

Combination no. : 0 401 878 711

Injection pump

Pump designation : PE8P120A320LS3816-10

EP type number

: 0 411 828 715

Governor

Governor design. : RSV650...1150P0A823-

: 0 421 833 280 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

: 0M422A Engine

: 206.0 1st version kW 2300 Rated speed

### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.00...4.10 : (3.95...4.15) Prestroke mm

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-4-1

Phasina : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm: 1180

Rack travel in mm : 9.40...9.50

Del.quantity cm3/: 13.5...13.7

100 s: (13.2...14.0)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 650.02nd speed

Rack travel in mm : 3.3...3.6 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

# GUIDE SLEEVE POSITION

Control-lever position

Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1180

Del.quantity 135.0...137.0

1000 : (132.0...140.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 42...50

Testina:

1st rack travel in: 8.40

rpm : 1210...1215 Speed

2nd rack travel in: 4.00

Speed rpm : 1232...1247 4th rack travel in: 1400

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 20...28

Setting point w/out bumper spring

rpm : 650 Rack travel in mm: 3.4

Speed : 650 rpm

Rack travel in mm : 3.30...3.60 Rack travel in mm : 2.00

Speed : 655...695 rom

SET IDLE AUXILIARY SPRING

Rack travel in mm: 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1180

Rack travel in m: 9.40...9.50

2nd speed rpm : 950

Rack travel in m: 10.80...11.10 3rd speed rpm : 1050 Rack travel in m: 10.40...10.60

FUEL DELIVERY CHARACTERISTICS

1st version

: 900 Speed rom

Del.quantity cm3/: 158.0...161.0

1000 s: (155.0...164.0)

cm3 : 8.00 1000 s: (12.0) rpm : 1075 Spread

Speed

Del.quantity cm3/: 148.0...152.0

1000 s: (145.0...155.0)

Spread cm3 : 8.00

1000 s: (12.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.40

rpm : 1210...1220 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 140.0...160.0

1000 s: (136.0...164.0)

LOW IDLE

Speed rpm : 650

Rack travel in mm : 3.30...3.60 Del.quantity cm3/ : 16.0...22.0

1000 s: (13.0...25.0) Spread

cm3 : 8.00

1000 s: (12.00)

Remarks:

Engine-speed difference between 1 mm

regulated and control-rod travel 4 mm =

25...35 1/min.

When adjusting and checking, adjust speed regulation to 1210...1220 L/min.

Afterwards, readjust speed regulation to 1160...1170 L/min.

APPLICATION

Forage harvester

### Note remarks

: MB 18,3 q Test sheet Edition : 28.03.91 : 6.4.90 Replaces Test oil : ISO-4113

Combination no. : 0 401 879 707

Injection pump

Pump designation : PE10P110A320LS3856 EP type number : 0 411 819 711

Governor

: RSV675...1050P0A823-Governor design.

: 0 421 833 338 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: OM 443 Engine

1st version kW : 242.0 Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 130...150

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 25...27 Prestroke mm : 4.00...4.10 : (3.95...4.15)

Rack travel in mm : 9.00...12.00 Firing order : 10-9-4-1-8--6-3-5-2

Phasing

: 0-45-72-117-144-189-: 216-261-288-333 Phasing Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 10

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 12.6...12.8

100 s: (12.3...13.0)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 675.0 2nd speed Rack travel in mm: 5.4...5.7 Del.quantity cm3/: 1.2...2.0

100 s: (0.9...2.2)

Spread cm3 : 0.4100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 7.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1030

: 126.0...128.0 Del.quantity

1000 : (123.5...130.5)

cm3 : 4.00 Spread

1000 : (7.50)

RATED SPEED

1st version Control lever

position degrees: 88...96

Testing: 1st rack travel in: 11.30 Speed rpm : 1165...1175 2nd rack travel in: 4.00 Speed rpm : 1210...1225 4th rack travel in: 1200 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 75...83 Setting point w/out bumper spring Speed rpm : 675 Rack travel in mm : 5.5

Testing:

rpm : 100 Speed Minimum rack trave: 19.50

Speed rpm : 675 Rack travel in mm : 5.40...5.70

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 600 Del.quantity cm3/ : 114.0...118.0 1000 s: (111.0...121.0)

cm3 : 6.00 Spread

1000 s: (9.00)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.30 Speed rpm : 1165...1175 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 140.0...160.0 1000 s: (136.0...164.0)

Remarks:

E12

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MAN 10.0 b2 : 27.02.91 : 14.12.90 Test sheet Edition Replaces Test oil : ISO-4113 Combination no. : 0 402 035 025 Injection pump Pump designation : PES5P120A720/3LS512 EP type number : 0 412 025 021 Governor Governer no. : 0 421 813 868 Customer-spec, information Customer : MAN Engine : D2865LF0/LU/01 1st version kW : 198.0 Rated speed : 1900 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 019 Opening. pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness x Length mm : 6.00X1.50X1000

Governor design. : RQV325...950PA876-8 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 30...32

: 3.50...3.60 Prestroke mm : (3.45...3.65)
Rack travel in mm : 9.00...12.00
Firing order : 1-3-5-4-2 : 0-72-144-216-288 Phasing Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 5 BASIC SETTING 1st speed rpm: 750 Rack travel in mm : 11.20...11.30 Del.quantity cm3/: 21.9...22.1 100 s: (21.6...22.4) cm3 : 0.5Spread 100 s: (0.9) rpm : 325.0 2nd speed Rack travel in mm: 4.0...4.4 Del.quantity cm3/: 1.7...2.3 100 s: (1.4...2.6) cm3 : 0.8 Spread 100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 995 1st speed travel mm : 9.70...9.90 2nd speed : 325 rpm : 1.30...1.70 travel mm 3rd speed 500 rpm 3.40...4.00 travel mm : 750 4th speed rpm : 6.60...7.00 travel mm : 1250 5th speed rpm travel mm : 13.00...14.00 GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1050 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 750 Speed Aneroid pressure h: 1000

: 219.0...221.0 Del.quantity

1000 : (216.0...224.0)

cm3 : 5.00 Spread

1000 : (9.00)

## RATED SPEED

1st version Control Lever

position degrees: 296...304

Testing:

1st rack travel in: 10.10 rpm : 990...1000 Speed

2nd rack travel in: 4.00

: 1060...1090 Speed rpm -

4th rack travel in: 1200

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 253...261

Testing:

Speed riom Minimum rack trave: 5.70 rpm : 325

Rack travel in mm : 4.10...4.30

CONSTANT REGULATION

rpm : 320...440 Speed

TORQUE CONTROL

Dimension a mm : 0.10

Torque control curve - 1st version

rpm : 950 1st speed

Rack travel in m: 11.10...11.20

2nd speed rpm : 750

Rack travel in m: 11.20...11.30

Aneroid/Altitude Compensator Test

1st version

Setting

Speed man : 500 Pressure hPa : 1000

Rack travel mm : 11.20...11.30

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 7.90...8.10

2nd pressure hPa : 110

Rack travel in m: 8.30...8.40

3rd pressure hPa : 350 Rack travel in m: 10.20...10.40

START CUT-OUT

Speed 1/min : 245 (265)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

: 950 Speed rpm

Del.quantity cm3/: 216.0...220.0 1000 s: (213.0...223.0)

Aneroid pressure h: 1000

Speed rpm : 600 Del.quantity cm3/ : 210.0...216.0 1000 s: (207.0...219.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 128.0...130.0

1000 s: (125.0...133.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.10

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 190.0...210.0

1000 s: (186.0...214.0)

LOW IDLE

Speed rpm : 325

Rack travel in mm : 4.00...4.40

Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: MAN-NR. 3-7046

Setting and blocking of pointer of start-of-delivery sensor on cyl. 5

start of delivery

Note remarks

Test sheet : MAN 10,0 e2 Edition : 27.02.91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 035 027

Injection pump

Pump designation : PES5P120A720/3LS528

: 0 412 025 022 EP type number

Governor

Governor design. : RQV325...950PA876-9

: D 421 813 899 Governer no.

Customer-spec. information Customer : MAN

Engine : D2865LF04 / LU04

1st version kW : 198.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 : (3.45...3.65) Prestroke mm

Rack travel in mm : 13.00...14.00 Firing order : 1-3-5-4-2

Phasing : 0-72-144-216-288

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 5

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 22.1...22.3

100 s: (21.8...22.6)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm : 4.3...4.7 Del.quantity cm3/ : 1.7...2.3

100 s: (1.4...2.6)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed

: 9.60...9.80 travel mm

rpm : 325 2nd speed

: 0.70...1.10 travel mm

: 550 3rd speed rpm

: 3.80...4.40 travel mm

: 800 4th speed rpm

travel mm : 7.00...7.40

5th speed : 1300 rpm

travel mm : 13.00...14.00

GL'IDE SLEEVE POSITION

Control-lever position Degree: -1

Speed rpm : 1030 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1000

221.0...223.0 1000 : (218.0...226.0) Del.quantity

: 5.00 Spread cm31000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 296...304

Testing:

1st rack travel in: 11.10 Speed rpm : 990...1000 2nd rack travel in: 4.00 Speed rpm : 1060...1090

4th rack travel in: 1200

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 252...260

Testing:

Speed : 100 rpm Minimum rack trave: 6.00 rpm : 325

Rack travel in mm : 4.40...4.60

CONSTANT REGULATION

rpm : 340...460 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed : 500 rpm Pressure hPa : 1000

: 12.10...12.20 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.90...9.10

2nd pressure hPa : 150

Rack travel in m: 9.30...9.40

3rd pressure hPa : 440

Rack travel in m: 11.30...11.60

START CUT-OUT

1/min: 245 (265) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

E16

Aneroid pressure h: 1000 : 950 Speed rpm

Del.quantity cm3/: 227.0...233.0 1000 s: (224.0...236.0)

Aneroid pressure h: 1000 Speed rpm

Del.quantity cm3/: 225.0...231.0 1000 s: (222.0...234.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/: 129.0...131.0
1000 s: (126.0...134.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.10

rpm : 990...1000 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 200.0...220.0

1000 s: (196.0...224.0)

LOW IDLE

Speed rpm : 325

Rack travel in mm : 4.30...4.70 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0)

cm3 : 8.00 Spread 1000 s: (12.00)

Remarks:

: MAN-NR. 3-7057

Setting and blocking of pointer of start-of-delivery sensor on cyl. 5

start of delivery

#### Note remarks

Test sheet : MAN 11,9 y Edition : 27.02.91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 036 085

Injection pump

Pump designation: PES6P120A720/3LS470-

EP type number : 0 412 026 055

Governor

Governor design. : RQV300...975/1100PA

Governer no. : D 421 813 919

Customer-spec. information Customer : MAN

: D2866LF Engine

1st version kW : 243.0 Rated speed : 2200

# TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

#### BASIC SETTING

1st speed rpm: 750

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 20.2...20.4

100 s: (19.9...20.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0Rack travel in mm: 4.6...5.0

Del.quantity cm3/: 1.2...1.8

100 s: (0.9...2.1)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1155 1st speed

travel mm : 8.70...8.90

: 300 2nd speed rpm

travel mm 1.20...1.40

3rd speed : 750 rpm

travel mm : 4.90...5.30

4th speed 1050 rom:

: **8**.30...8.70 : 1350 travel mm

5th speed rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-Lever position

Degree: 55...57 rpm : 1050 Speed

Rack travel in mm : 11.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Rack travel in m: 9.00...9.20 Speed rpm : 750 Aneroid pressure h: 1000 2nd pressure hPa : 85 : 202.0...204.0 Rack travel in m: 9.30...9.40 Del.quantity 1000 : (199.0...207.0) 3rd pressure hPa : 280 : 5.00 Spread cm3 Rack travel in m: 10.50...10.80 1000 : (9.00) START CUT-OUT RATED SPEED 1/min: 220 (240) Speed 1st version Control lever FUEL DELIVERY CHARACTERISTICS position degrees: 114...122 1st version Testing: 1st rack travel in: 9.80 Aneroid pressure h: 1000 rpm : 1145...1160 Speed rpm : 1100 Del.quantity cm3/: 205.0...209.0 1000 s: (202.0...212.0) 2nd rack travel in: 4.00 Speed rpm : 1190...1220 4th rack travel in: 1350 Aneroid pressure h: 1000 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 8...24 Speed rpm : 500 Del.quantity cm3/: 184.0...196.0 1000 s: (181.0...199.0) Testing: Speed : 100 Aneroid pressure h: -COM Speed rpm : 500 Del.quantity cm3/ : 132.0...134.0 1000 s: (129.0...137.0) Minimum rack trave: 6.30 : 300 rom Rack travel in mm : 4.70...4.90 CONSTANT REGULATION rpm : 340...450 Speed **BREAKAWAY** TORQUE CONTROL 1st version Dimension a mm : 0.80 1mm rack travel less than Torque control curve - 1st version 1st speed rpm : 750 full load rack tr: 9.80 Rack travel in m: 11.60...11.70 rpm : 1145...1160 Speed 2nd speed rpm : 1100 Rack travel in m: 10.80...10.90 INTERMEDIATE RATED SPEED 3rd speed rpm : 820 Rack travel in m: 11.30...11.40 4th speed rpm : 850 Rack travel in m: 10.90...11.20 Control lever position degrees: 261...269 Rack travel in mm: 10.00 rpm : 740...760 Aneroid/Altitude Rack travel in mm: 4.00 Compensator Test : 825...845 Speed non. STARTING FUEL DELIVERY 1st version Setting rpm : 500 hPa : 1000 Speed rpm : 100 Gel.quantity cm3/ : 225.0...245.0 1000 s: (221.0...249.0) Speed Pressure Rack travel mm : 11.30...11.40 Measurement LOW IDLE Speed 1/min: 500 Speed rpm : 300 1st pressure hPa : -Rack travel in mm : 4.60...5.00

E18

Del.quantity cm3/: 12.0...18.0 1000 s: (9.0...21.0) Spread cm3 : 8.00 1000 s: (12.00)

Remarks:

: MAN-NR. 3-7828

Setting and blocking of pointer of start-of-delivery sensor on cyl. 6 start of delivery

Note remarks

Test sheet : MAN 11,9 r2 Edition : 18.02.91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 036 735

Injection pump

Pump designation : PES6P120A720/3LS3250

EP type number : 0 412 026 742

Governor

Governor design. : RQ300/1000PA813-13

Governer no. : 0 421 801 529

Customer-spec. information Customer : MAN

Engine : D2866LF03/LUH01

: 273.0 1st version kW Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

**Opening** 

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 14.50...15.50 Firing order : 6-2-4-1-5-3

Phasing

: 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 6

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.90...6.10 & maximum rack tra: 14.5...15.5 Difference ° CS : 2.00...4.00

BASIC SETTING

Spread

Spread

1st speed rpm: 700

Rack travel in mm : 15.00...15.10

Del.quantity cm3/: 24.2...24.4

100 s: (23.9...24.7)

cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm: 4.8...5.2

Del.quantity cm3/: 1.7...2.3

100 s: (1.4...2.6) cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

Speed rpm: 650 Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Aneroid pressure h: 1200

Del.quantity : 242.u...247.0)

: 5.00

1000 : (9.00)

RATED SPEED

1st version

E20

Setting point:

Speed rpm Rack travel in mm: 20.0

Testing:

1st rack travel in: 14.00 Speed rpm : 1045...1060

2nd rack travel in: 4.00

rpm : 1090...1120 Speed

4th rack travel in: 1350

rom : 0.00...1.00Speed

LOW IDLE 1

Setting point w/out bumper spring Speed rpm : 300

Rack travel in mm: 5.0

Testing:

rpm : 100 Speed Minimum rack trave: 6.50 : 300 rpm

Rack travel in mm : 4.90...5.10

Rack travel in mm : 2.00 Speed : 360...400 rom

TORQUE CONTROL

Dimension a mm : 0.20

Torque control curve - 1st version

1st speed rpm : 1000 Rack travel in m: 15.00...15.10

rpm : 700 2nd speed

Rack travel in m: 15.50...15.70

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 hPa : 1200 Speed rom Pressure

Rack travel mm : 15.00...15.10

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.70...11.90

2nd pressure hPa : 110

Rack travel in m: 12.00...12.10
3rd pressure hPa : 470
Rack travel in m: 13.70...14.10

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 rpm : 1000 Speed

Del.quantity cm3/: 241.0...247.0 1000 s: (238.0...250.0)

: 700 rpm

Del.quantity cm3/: 82.0...102.0 1000 s: (79.0...105.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 14.00

rpm : 1045...1060 Speed

STARTING FUEL DELIVERY

: 100 Speed rom

Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 4.80...5.20 Del.quantity cm3/: 17.0...23.0 1000 s: (14.0...26.0)

cm3 : 8.00 Spread

1000 s: (12.00)

Remarks:

: MAN-NR. 3-7050X

Setting and blocking of pointer of start-of-delivery sensor on cyl. 6

start of delivery

Note remarks

: FIA 7,7 b : 19.03.91 Test sheet Edition : 1.3.91 Replaces Test oil : ISO-4113

Combination no. : 0 402 046 343

Injection pump

Pump designation : PES6P120A720RS3275 EP type number : 0 412 026 745

Governor

Governor design. : RQV300...1100PA954-1

Governer no. : 0 421 815 273

Customer-spec. information Customer : IVECO-FIAT

Engine : 8360,46,016

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

**Opening** 

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing **: 0-60-120-180-240-300** 

Tolerance + - \* : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 21.8...22.0

100 s: (21.5...22.3)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 4.0...4.4

Del.quantity cm3/: 2.0..2.6 100 s: (1.7...2.9)

Spread cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1145

travel mm : 10.60...10.80

2nd speed rpm : 300

travel mm : 1.00...1.40

3rd speed : 850 rpm

travel mm : 6.60...7.00

4th speed rpm : 1350

travel mm : 13.00...14.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1150 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900 Aneroid pressure h: 1500

Anerou p. Del.quantity 1000 : 218.0...220.0

: (215.0...223.0)

Spread : 5.00 cm3

1000 : (9.00)

RATED SPEED

1st version Control Lever

position degrees: 115...123

Testing:

1st rack travel in: 11.40

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1215...1245 Speed

4th rack travel in: 1400

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 65...73

Testing:

Speed : 100 rpm Minimum rack trave: 5.70

rpm : 300 Speed

Rack travel in mm : 4.10...4.30

CONSTANT REGULATION

rpm : 340...450 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed

st speed rpm : 900

Rack travel in m: 12.80...12.90

and speed rpm : 1100

2nd speed

Rack travel in m: 12.30...12.50

rpm : 750 3rd speed

Rack travel in m: 12.30...12.50

Aneroid/Altitude Compensator Test

1st version Setting

: 900 Speed rpm hPa : 1500 Pressure

: 12.80...12.90 Rack travel mm

Measurement

1/min: 900 Speed

1st pressure hPa : -

Rack travel in m: 8.40...8.60

2nd pressure hPa : 600

Rack travel in m: 11.70...11.80

3rd pressure hPa : 420

Rack travel in m: 9.40...9.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed rpm : 1100
Del.quantity cm3/: 202.0...206.0
1000 s: (199.0...209.0)

Aneroid pressure h: 1500 Speed rom

Del.quantity cm3/: 202.0...208.0

1000 s: (199.0...211.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 102.0...104.0 1000 s: (99.0...107.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.40

rpm : 1140...1150 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 85.0...115.0 1000 s: (81.0...119.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm: 4.00...4.40

Del.quantity cm3/: 20.0...26.0

1000 s: (17.0...29.0)

Spread cm3 : 8.00

1000 s: (12.00)

Remarks:

Setting and blocking of poil wer of start-of-delivery sensor on cyl. 1

start of delivery

### Note remarks

Test sheet : DEE 7,6 y Edition : 10.04.91 Replaces : 9.7.90 Test oil : ISO-4113

Combination no. : 0 402 076 723

Injection pump

Pump designation : PES6P120A720RS3203 EP type number : 0 412 026 728

Governor

Governor design. : R\$V400...1100P2A534--

: 0 421 833 276 Governer no.

Customer-spec. information : JOHN DEERE Customer

Engine : 6076 AF & HF

: 180.0 1st version kW : 2200 Rated speed

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x3.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_

BEGINNING OF DELIVERY Test prossure, bar: 27...29

: 3.55...3.65 : (3.50...3.70) Prestroke mm

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

#### BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 15.0...15.2

100 s: (14.7...15.4)

cm3 : 0.4Spread

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm : 5.5...5.7 Del.quantity cm3/ : 2.3...2.8

100 s: (2.1...3.1)

Spread cm3 : 0.6100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 1200

: 150.0...152.0 1000 : (147.5...154.5) Del.quantity

: 4.00 Spread cm3

1000 : (6.50)

### RATED SPEED

1st version Control lever

position degrees: 40...48

Testing:

1st rack travel in: 10.80

Speed rpm : 1150...1160

2nd rack travel in: 4.00

: 1220...1230 Speed LIDU.

3rd rack travel in: 4.00

rpm : 1220...1250 Speed

4th rack travel in: 1350

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control Lever

position degrees: 16...24

Setting point w/out bumper spring

Speed rom : 400 Rack travel in mm: 5.1

Testing:

Speed : 100 rpm Minimum rack trave: 19.00 rpm : 400

Rack travel in mm : 5.50...5.70

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1100

Rack travel in m: 11.80...11.90 and speed rpm : 700

2nd speed

Rack travel in m: 12.60...12.80

Aneroid/Altitude Compensator Test

1st version

Setting

: 500 Speed rpm Pressure

hPa : 1200 mm : 12.60...12.80 Rack travel mm

Measurement

Speed  $1/\min : 500$ 

1st pressure hPa : -

Rack travel in m: 10.40...10.60

2nd pressure hPa : 720

Rack travel in m: 11.00...11.10

3rd pressure hPa : 895

Rack travel in m: 11.80...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 Speed : 700 rpm

Del.quantity cm3/: 173.5...178.5 1000 s: (171.0...181.0)

Aneroid pressure h: -

rpm : 800 Speed

Del.quantity cm3/: 120.0...124.0 1000 s: (117.0...127.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.80

rpm : 1150...1160 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 90.0...110.0

1000 s: (85.0...115.0) Rack travel in mm: 20.00...21.00

LOW IDLE

Speed rpm : 400 Rack travel in mm : 5.50...5.70 Del.quantity cm3/ : 23.5...28.5

1000 s: (21.0...31.0)

cm3 : 6.00Spread

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE32033

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

Note remarks

: DEE 10,1 q Test sheet : 15.11.90 Edition : 2.5.90 Replaces Test oil : ISO-4113

Combination no. : 0 402 076 730

Injection pump

Pump designation : PES6P110A720RS3217

EP type number : 0 412 016 724

Governor

Governor design. : RSV550...1050P2A534-

: 0 421 833 304 Governer no.

Customer-spec. information : JOHN DEERE Customer

Engine : 6619AT07

1st version kW : 205.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 103 assembly

Opening.

pressure, bar : 207...210

Orifice plate

diameter mm : 0,7

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke nm : 3.45...3.55 : (3.40...3.60)

Rack travel in mm: 10.50

: 1-5-3-6-2-4 firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 1050 1st speed

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 18.3...18.5

100 s: (18.1...18.8)

Spread cm3 : 0.4

100 s: (0.6)

rpm : 550.0 2nd speed Rack travel in mm: 5.2...5.4 Del.quantity cm3/: 3.3...3.7

100 s: (3.1...3.9)

cm3 : 0.6 Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 900

: 183.5...185.5 Del.quantity

1000 : (181.0...188.0) : 4.00

Spread cm3 1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 41...49

Testing:

1st rack travel in: 11.10

rpm : 1095...1105 Speed

2nd rack travel in: 4.00

rpm : 1180...1190 Speed

3rd rack travel in: 4.00

Speed rpm : 1195...1215 4th rack travel in: 1275

rom : 0.30...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 22...30

Setting point w/out bumper spring

rpm : 550

Rack travel in mm: 4.8

Testing:

rpm : 100 Speed

Minimum rack trave: 19.00 Speed rpm: 550 Rack travel in mm: 5.20...5.40

Ameroid/Altitude

Compensator Test

1st version

Setting

Speed rpm : 500 hPa : 900 Pressure

Rack travel mm : 12.10...12.20

Measurement

1/min : 500Speed

1st pressure hPa : -

Rack travel in m: 10.60...10.80 2nd pressure hPa : 295 Rack travel in m: 11.00...11.10

3rd pressure hPa : 510

Rack travel in m: 11.70...12.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 167.0...171.0

1000 s: (165.0...173.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10

Speed rpm : 1095...1105

STARTING FUEL DELIVERY

LOW IDLE

Speed rpm : 550
Rack travel in mm : 5.20...5.40
Del.quantity cm3/ : 33.0...37.0
1000 s: (31.0...39.0)

Spread cm3 : 6.00

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE36078

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

**APPLICATION** 

Excavator

E27

Note remarks

: DEE 10,1 g1 : 15.11.90 : 1.2.90 Test sheet Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 076 731

Injection pump

Pump designation : PES6P110A720RS3217 EP type number : 0 412 016 724

Governor

Governor design. : RSV400...1050P2A534-

Governer no. : 0 421 833 305

Customer-spec. information

Customer : JOHN DEERE

Engine : 6101 H

1st version kW : 224.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. \*C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X3.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 3.45...3.55 Prestroke mm

: (3.40...3.60)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1050

Rack travel in mm : 13.10...13.20

Del.guantity cm3/: 21.7...21.9

100 s: (21.4...22.1)

Spread cm3 : 0.4

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/: 2.6...3.1

100 s: (2.3...3.3)

Spread cm3 : 0.6100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm : 800 Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1050 Aneroid pressure h: 1200

Del.quantity : 217.0...21.5)

: 4.00 Spread cm3

1000 : (6.50)

RATED SPEED

1st version Control lever

position degrees: 36...44

Testing:

1st rack travel in: 12.10

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1170...1180 Speed

4th rack travel in: 1300

rpm : 0.30...1.40Speed

LOW IDLE 1 Control Lever

position degrees: 14...22 Setting point w/out bumper spring

: 400 rpm Pack travel in mm: 5.4

Testing:

rpm Speed Minimum rack trave: 19.00

Speed rpm: 400 Rack travel in mm: 5.80...6.00

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1050 1st speed

Rack travel in m: 13.10...13.20

rpm : 700 2nd speed

Rack travel in m: 14.10...14.30

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rpm hPa : 1200 Pressure

: 14.10...14.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.90...17.10

2nd pressure hPa : 325

Rack travel in m: 11.60...11.70

3rd pressure hPa : 640

Rack travel in m: 12.90...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200 : 700 Speed mon

Del.quantity cm3/: 233.5...238.5 1000 s: (231.0...241.0)

Aneroid pressure h: -: 500 Speed rom

Del.quantity cm3/: 160.0...164.0 1000 s: (157.0...167.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.10

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm

Del.quantity cm3/: 165.0...185.0 1000 s: (160.0...190.0)

Rack travel in mm : 20.00...21.00

LOW IDLE

Speed rpm : 400

Rack travel in mm : 5.80...6.00 Del.quantity cm3/: 26.0...31.0

1000 s: (23.5...33.5)

Spread cm3 : 6.001000 s: (8.00)

Remarks:

: JOHN DEERE # RE36881

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark 10.5° cam angle after start of delivery cyl. 1

**APPLICATION** 

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : DEE 10,1 g2 Edition : 10.04.91 : 18.2.91 Replaces Test oil : ISO-4113 Combination no. : 0 402 076 739 Injection pump Pump designation : PES6P110A720RS3217 : 0 412 016 724 EP type number Governor Governor design. : RSV400...1050P2A549 Governer no. : 0 421 833 350 Customer-spec. information Customer : JOHN DEERE : 6101 HRW01 Engine 1st version kW : 230.0 : 2100 Rated speed TEST BENCH REQUIREMENTS Test oil : 38...42 inlet temp. °C Overflow valve : 1 457 413 010 Inlet press., bar: 1.50 Test nozzle holder : 1 688 901 101 assembly Opening pressure, bar : 207...210 Orifice plate diameter mm : 0,6 : 1 680 750 015 Test lines Outside diameter x Wall thickness x Length mm : 6.00X3.00X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_

: 3.35...3.45 : (3.30...3.50) Prestroke mm Rack travel in mm: 10.50 : 1-5-3-6-2-4 Firing order Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1050 Rack travel in mm : 12.90...13.00 Del.quantity cm3/: 20.8...21.0 100 s: (20.6...21.2) cm3 : 0.4Spread 100 s: (0.6) rpm : 400.0 2nd speed Rack travel in mm : 5.7...5.9 Del.quantity cm3/ : 2.0...2.4 100 s: (1.7...2.6) Spread cm3 : 0.6100 s: (0.8) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 Governor spring pre-tension Click setting x : 4.50 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1050 Aneroid pressure h: 1200 Del.quantity : 208.5...212.5) : 4.00 Spread cm3 1000 : (6.50) RATED SPEED 1st version Control lever position degrees: 38...46 Testing:

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

1st rack travel in: 11.90

Speed **: 1095...1**105 rom

2nd rack travel in: 4.00

rpm : 1165...1175 Speed

3rd rack travel in: 4.00

Speed rpm : 1165...1195 4th rack travel in: 1300

Speed rpm : 0.30...1.40

LOW IDLE 1

Control Lever

position degrees: 15...23

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 5.3

Testing:

Speed : 100 rpm Minimum rack trave: 19.00

Speed rpm : 400

Rack travel in mm : 5.70...5.90

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1050

2nd speed npm

Rack travel in m: 12.90...13.00 nd speed rpm : 700 Rack travel in m: 13.80...14.00

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 man hPa : 1200 Pressure

: 13.80...14.00 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.00...11.20

2nd pressure hPa : 385 Rack travel in m: 11.80...11.90

3rd pressure hPa : 640 Rack travel in m: 12.80...13.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm: 700
Del.quantity cm3/: 214.5...218.5
1000 s: (212.5...220.5)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 156.0...160.0

1000 s: (154.0...162.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.90

rpm : 1095...1105 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 160.0...180.0 1000 s: (155.0...185.0) Rack travel in mm: 20.00...21.00

LOW IDLE

rpm : 400 Speed

Rack travel in mm: 5.70...5.90 Del.quantity cm3/: 20.0...24.0 1000 s: (17.5...26.5)

Spread cm3 : 6.00

1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47354

Adjustment without torque-control spring retainer with 0,5 mm less control-rod travel. Increase in full-load delivery with torque-control

spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Sweeping machine

APPLICATION

Tractor (tractor engines)

Note remarks

: DEE 7,6 y 2 : 19.03.91 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 076 742

Injection pump

Pump designation : PES6P120A720RS3203 EP type number : 0 412 026 728

Governor

Governor design. : RSV400...1050P2A534-

: 0 421 833 356 Governer no.

Customer-spec. information

Customer : JOHN DEERE

: 6076 HZ030 Engine

1st version kW : 193.0 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X3.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 3.55...3.65

: (3.50...3.70)
Rack travel in mm : 10.50
Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm : 10501st speed

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 15.4...15.6

100 s: (15.2...15.8)

Spread cm3 : 0.4

100 s: (0.6)

rpm : 400.02nd speed Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 3.1...3.5

100 s: (2.8...3.7)

Spread cm3 : 0.6100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050 Speed Aneroid pressure h: 900

Del.quantity : 154.5...158.5)

: 4.00 cm3 Spread 1000 : (6.50)

RATED SPEED

1st version Control lever

position degrees: 41...49

Testing: 1st rack travel in: 11.10 rpm : 1095...1105 Speed 2nd rack travel in: 4.00 Speed rpm : 1155...1165 3rd rack travel in: 4.00 Speed rpm: 1155...1185 4th rack travel in: 1300 rpm : 0.30...1.40Speed LOW IDLE 1 Control lever position degrees: 18...26 Setting point w/out bumper spring rpm : 400 Rack travel in mm: 5.4 Testing: Speed : 100 rpm Minimum rack trave: 19.00 Speed rpm : 400 Rack travel in mm : 5.80...6.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1050 Rack travel in m: 12.10...12.20 2nd speed rpm : 700 Rack travel in m: 13.40...13.60 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed riom hPa : 900 Pressure Rack travel mm : 13.40...13.60 Measurement Speed  $1/\min : 500$ 1st pressure hPa : -Rack travel in m: 10.50...10.70 2nd pressure hPa : 375 Rack travel in m: 11.20...11.60 3rd pressure hPa : 590 Rack travel in m: 12.80...12.90 FUEL DELIVERY CHARACTERISTICS

1st version
Aneroid pressure h: 900
Speed rpm : 700
Del.quantity cm3/: 189.5...193.5
1000 s: (187.5...195.5)
Aneroid pressure h: Speed rpm : 800

Del.quantity cm3/: 116.5...120.5 1000 s: (114.5...122.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.10 Speed rpm : 1095...1105

STARTING FUEL DELIVERY

LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.80...6.00
Del.quantity cm3/ : 31.0...35.0
1000 s: (28.5...37.5)
Spread cm3 : 6.00

ead cms : 6.00 1000 s: (8.00)

Remarks:

: JOHN DEERE # RE47549

Adjustment without torque-control spring retainer with 1 mm less control-rod travel. Increase in full-load delivery with torque-control spring retainer.

Starting/full-load transition speed from holding magnet = 450 1/min.

Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

F05

Note remarks

Test sheet : PER 16,3 b
Edition : 19.03.91
Replaces : 5.10.90
Test oil : ISO-4113

Combination no. : 0 402 638 803

Injection pump

Pump designation : PE8P12OA12ORS7141 EP type number : 0 412 628 823

Governor

Governor design. : RQ750PA871 Governer no. : 0 421 801 404

Customer—spec. information Customer : PERKINS

Engine : CV8-320 G

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.50...4.60 : (4.45...4.65)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 6- 5- 4- 8-7- 2

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - \* : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 14.40...14.50

Del.quantity cm3/: 33.3...33.5

100 s: (33.0...33.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 7.5...7.7

Del.quantity cm3/: 3.6...4.2 100 s: (3.3...4.5)

Spread cm3 : 0.8

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700

Del.quantity : 333.0...335.0

1000 : (330.0...338.0)

Spread cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version

Control lever

position degrees: 77...85

Testing:

1st rack travel in: 13.40 Speed rpm : 750...755

Speed rpm : 750...755 2nd rack travel in: 4.00 Speed rpm : 795...805

4th rack travel in: 900

Speed rpm : 0.00...1.00

**BREAKAWAY** 

1st version

F06

1mm rack travel less than

full load rack tr: 13.40 Speed rpm : 750...755

Remarks:

APPLICATION

Generator

Note remarks

Test sheet : PER 16,3 d Edition : 22.03.91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 638 805

Injection pump

Pump designation : PE8P12DA12DRS7199

EP type number : 0 412 628 843

Governor

Governor design. : RQ750PA871 : 0 421 801 404 Governer no.

Customer spec. information

Customer : PERKINS (RR)

Engine : CV8-360 G

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10

: (3.95...4.15)

Rack travel in mm : 9.00...12.00

F08

: 1- 3- 6- 5- 4- 8-7- 2 Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 36.2...36.4

100 s: (35.9...36.7)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 4.9...5.1

Del.quantity cm3/: 3.6...4.2 100 s: (3.3...4.5)

cm3 : 0.8Spread

100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 700 Speed

: 362.0...364.0 Del.quantity

1000 : (359.0...367.0)

Spread cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 87...95

Testing:

1st rack travel in: 12.00 Speed rpm : 750...755 2nd rack travel in: 4.00

rpm : 775...785 Speed

4th rack travel in: 900

rpm : 0.00...1.00Speed

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 12.00 Speed rpm : 750...755

Remarks:

APPLICATION

Generator

## Note remarks

Test sheet : PER 16,3 d1 Edition : 05.03.90

Replaces : -

Test oil : ISO-4113

Combination no. : 0 402 638 805

Injection pump

Pump designation : PE8P12OA12ORS7199 EP type number : 0 412 628 843

Governor

Governor design. : RQ750PA871-1 Governer no. : 0 421 801 515

Customer—spec. information Customer : PERKINS

Engine : CV8-360 G

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10

: (3.95...4.15)

Rack travel in mm : 9.00...12.00

Firing order : 1-3-6-5-4-8-7-2

Phasing : 0-45-90-135-180-225-

270-315 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

#### BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 13.00...13.10

Del.quantity cm3/: 36.2...36.4

100 s: (35.9...36.7)

Spread cm3: 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 4.9...5.1 Del.quantity cm3/: 3.6...4.2

100 s: (3.3...4.5)

Spread cm3 : 0.8 100 s: (1.2)

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 700

Del.quantity : 362.0...364.0 1000 : (359.0...367.0)

Spread cm3 : 5.00

1000 : (9.00)

#### RATED SPEED

1st version Control lever

position degrees: 90...98

Testing:

1st rack travel in: 12.00 Speed rpm : 750...755 2nd rack travel in: 4.00 Speed rpm : 770...780

4th rack travel in: 900

Speed rpm : 0.00...1.00

## **BREAKAWAY**

1st version

F10

1mm rack travel less than

full load rack tr: 12.00 Speed rpm : 750...755

Remarks:

APPLICATION

Generator

#### Note remarks

Test sheet : MB 21,9 v 1
Edition : 28.ū3.91
Replaces : 4.5.90
Test oil : ISO-4113

Combination no. : 0 402 640 806

Injection pump

Pump designation : PE12P12OA32OLS7806 EP type number : 0 412 620 805

Governor

Governor design. : RQV350...1000PA835-1

Governer no. : 0 421 813 590

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 444 LA

1st version kW : 419.0 Rated speed : 2000

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

assembly : 1 688 901 019

**Opening** 

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 4.00...4.10 : (3.95...4.15)

Rack travel in mm : 9.00...12.00 Firing order : 12-1-5-9-8

: 12-1-5-9-8-3-4-11-10-2-6-7

Phasing : 0-45-60-105-120-165-180-225-240-285-300-

100-225-240-205-345

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 12

#### BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.30...13.50

Del.quantity cm3/: 18.7...18.9

100 s: (18.4...19.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm: 350.0

Rack travel in mm : 5.9...6.2 Del.quantity cm3/ : 1.6...2.2

100 s. (1.3...2.5)

Spread cm3 : 0.8 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 350

travel mm : 1.90...2.10 2nd speed rpm : 700

travel mm : 4.90...5.30

3rd speed rpm : 1050 travel mm : 8.00...8.40

4th speed rpm : 1110

travel mm : 9.20...9.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1050

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Rack travel in m: 12.60...12.80 Speed rpm : 600 3rd pressure hPa : -Aneroid pressure h: 650 Rack travel in m: 10.60...10.90 Del.quantity : 187.0...189.0 1000 : (184.0...192.0) START CUT-OUT cm3 : 5.00 Spread 1000 : (9.00) 1/min: 270 (290) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever 1st version position degrees: 115...123 Aneroid pressure h: 1200 rpm : 1000 Speed Del.quantity cm3/: 182.0...186.0 1000 s: (179.0...189.0) Testing: 1st rack travel in: 11.70 rpm : 1045...1060 Speed Spread cm3 : 8.002nd rack travel in: 4.00 1000 s: (12.0) Speed rpm : 1110...1140 Aneroid pressure h: 1200 Speed rpm : 800 Del.quantity cm3/ : 196.0...200.0 1000 s: (193.0...203.0) 4th rack travel in: 1300 rom : 0.00...1.00Speed LOW IDLE 1 cm3 : 8.00 Spread Control lever 1000 s: (12.0) position degrees: 64...72 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 125.0...129.0 1000 s: (122.0...132.0) Testina: rpm : 200 Speed Minimum rack trave: 7.50 cm3 : 8.00Spread Speed rpm : 350 Rack travel in mm : 5.90...6.30 1000 s: (12.0) CONSTANT REGULATION **BREAKAWAY** Speed rpm : 400...600 1st version TORQUE CONTROL 1mm rack travel less than Dimension a mm : 0.60 2nd speed rpm : 1000 full load rack tr: 11.70 Rack travel in m: 12.70...12.90 rpm : 1045...1060 Speed 3rd speed rpm : 915 Rack travel in m: 13.20...13.20 STARTING FUEL DELIVERY 4th speed rpm : 800 Rack travel in m: 13.30...13.50 Speed rpm : 100 Del.quantity cm3/: 170.0...190.0 Aneroid/Altitude 1000 s: (166.0...194.0) Compensator Test Remarks: 1st version Setting Speed : 600 **APPLICATION** rpm hPa : 650 Pressure Rack travel mm : 13.30...13.50 Rail car Measurement Speed 1/min: 600 1st pressure hPa : 300 Rack travel in m: 11.50...11.70 2nd pressure hPa : 420

#### Note remarks

: MB 21,9 j 2 Test sheet : 28.03.91 Edition Replaces : 18.2.91 Test oil : ISO-4113

Combination no. : 0 402 640 825

Injection pump

Pump designation: PE12P120A320LS7813-2

EP type number : 0 412 620 826

Governor

Governor design: RQ900PA966-2 Governer no. : 0 421 801 571

Customer-spec. information

Customer : MERCEDES-BENZ

: OM 444 LA Engine

: 529.0 1st version kW : 1800 Rated speed

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 19.00...21.00 Firing order

: 12- 1- 5- 9- 8- 3-4- 11- 10- 2- 6- 7

Phasing : 0-45-60-105-120-165-

180-225-240-285-300-

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 12

## BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 16.50...16.60

Del.quantity cm3/: 28.0...28.2

100 s: (27.7...28.5)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 5.6...6.2

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 880

: 1.40...1.80 travel mm

rpm : 940 2nd speed

travel mm : 5.50...5.90

rpm : 1000 3rd speed

travel mm : 11.10...11.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

Del.quantity : 280.0...282.0

1000 : (277.0...285.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 86...94

Testing:
1st rack travel in: 15.50
Speed rpm: 905...910
2nd rack travel in: 4.00
Speed rpm: 950...960
4th rack travel in: 1000 Speed rpm : 0.00...1.00

## BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 15.50 Speed rpm : 905...910

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 270.0...290.0 1000 s: (266.0...294.0)

Remarks:

Observe VDT-I-420/120

**APPLICATION** 

Generator

#### Note remarks

Test sheet : MB 21,9 j 3 : 28.03.91 Edition Replaces : 18.2.91 Test oil : ISO-4113

Combination no. : 0 402 640 826

Injection pump

Pump designation : PE12P120A320LS7813-2 : 0 412 620 826

EP type number

Governor

Governor design. : RQ750PA966-3 : 0 421 801 572 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 444 LA

: 441.0 1st version kW : 1500 Rated speed

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 150...170

Test nozzle holder

: 1 688 901 019 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm : 19.00...21.00 Firing order : 12-1-5-9-8-3-4-11-10-2-6-7

: 0-45-60-105-120-165-Phasing

180-225-240-285-300-

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 16.00...16.10

Del.quantity cm3/: 28.0...28.2

100 s: (27.7...28.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.6...6.2 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6 Spread

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 740

: 3.00...3.40 rpm : 780 travel mm

2nd speed

: 6.40...6.80 travel mm

3rd speed rpm : 820

: 10.70...11.10 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

: 280.0...282.0 Del.quantity

1000 : (277.0...285.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 86...94

Testing:

1st rack travel in: 15.00 Speed rpm: 755...760

2nd rack travel in: 4.00

Speed rpm: 780...790

4th rack travel in: 1000

Speed rpm: 0.00...1.00

# BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 15.00 Speed rpm : 755...760

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 270.0...290.0 1000 s: (266.0...294.0)

Remarks:

Observe VDT-I-420/120

APPLICATION

Generator

Note remarks

Test sheet : MAN 21,0 e2 Edition : 28,03,91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 640 833

Injection pump

Pump designation : PE12P12OA520LS7829-1

: 0 412 620 827 EP type number

Governor

Governor design. : RQV300...1150PA943-1

Governer no. : 0 421 813 869

Customer-spec. information Customer : MAN

Engine : D2842LZE

1st version kW : 809.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening 1

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.50...4.60 Prestroke mm (4.45...4.65)

Rack travel in mm : 9.00...12.00 Firing order : 12-1-5-9-8-3-4-11-10-2-6-7

Phasing : 0-45-60-105-120-165-

180-225-240-285-300-

: 345 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 12

BASIC SETTING

1st speed rpm : 1150

Rack travel in mm : 13.80...13.90

Del.quantity cm3/: 30.4...30.6

100 s: (30.1...30.9)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 500 2nd speed

Rack travel in mm : 9.00...9.20 Del.quantity cm3/: 14.9...15.1

100 s: (14.6...15.4)

cm3 : 0.8 Spread 100 s: (1.2)
3rd speed rpm : 300
Rack travel in mm : 7.30...7.50

Del.quantity cm3/ : 5.2...5.6 \*

100 s: (-)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed 300 rpm :

1.20...1.60 travel mm

2nd speed 450 rpm

: 2.90...3.50 : 750 travel mm

3rd speed rpm

: 5.70...6.10 : 1150 travel mm

4th speed rpm

travel mm : 9.50...9.70

5th speed : 1400 rpm

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1225 Rack travel in mm : 15.20...17.80

1/min : 220 (240) Speed FULL LOAD DELIV. AT FULL LOAD STOP FUEL DELIVERY CHARACTERISTICS 1st version rpm : 1150 Speed Aneroid pressure h: 1300 1st version : 304.0...306.0 Del.quantity Aneroid pressure h: -1000 : (301.0...309.0) : 500 Speed rpm Del.quantity cm3/: 149.0...151.0 1000 s: (146.0...154.0) : 5.00 Spread cm3 1000 : (9.00) cm3 : 8.00 Spread RATED SPEED 1000 s: (12.0) 1st version Control Lever **BREAKAWAY** position degrees: 116...124 1st version Testina: 1mm rack travel less than 1st rack travel in: 12.80 Speed rpm : 1190...1200 full load rack tr: 12.80 2nd rack travel in: 4.00 rpm : 1190...1200 Speed Speed rpm : 1300...1330 4th rack travel in: 1400 STARTING FUEL DELIVERY rom : 0.00...1.00Speed LOW IDLE 1 Speed rpm : 100 Del.quantity cm3/: 100.0...120.0 \* 1000 s: (-) Control lever position degrees: 76...84 Speed rpm : 100 Del.quantity cm3/ : - \*\* 1000 s: (-) Testing: Speed rpm : 100 Minimum rack trave: 8.90 : 300 Rack travel in mm : 17.5...21.0 Speed rom Rack travel in mm : 7.30...7.50 HIGH IDLE CONSTANT REGULATION rpm : 280...410 Speed 1st version Speed rpm : 500 Aneroid/Altitude Rack travel in mm: < 7.00 Del.quantity cm3/: - \*\* 1000 s: (-) Compensator Test 1st version 2nd version Setting Speed rpm : 500 Rack travel in mm: < 7.50 Speed rpm : 500 Pressure hPa : 1300 Del.quantity cm3/: < 50.0 : 13.80...13.90 1000 s: (-) Rack travel mm Measurement 3rd version Speed 1/min: 500 Speed rpm : 500 Rack travel in mm : 8.50...8.70 1st pressure hPa : -Del.quantity cm3/: 125.0... 1000 s: (-) Rack travel in m: 9.00...9.20 2nd pressure hPa : 100 Rack travel in m: 9.50...9.60 Remarks: 3rd pressure hPa : 470 : MAN-NR. 3-7156 Rack travel in m: 12.40...12.80 \* applies to cylinders 4, 5, 6, 8, 10 START CUT-OUT \*\* applies for cylinders 1, 2, 3, 7, 9 and 11
APPLICATION
Ship

#### Note remarks

Test sheet : MB 11,0 t 2 : 19.03.91 Edition : 30.3.90 Replaces Test oil : ISO-4113

Combination no. : 0 402 646 843

Injection pump

Pump designation : PE6P120A320LS7808 EP type number : 0 412 626 816

Governor

Governor design. : RQV300...1050PA797-2

: 0 421 813 614 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M441 LA

: 240.0 1st version kW Rated speed : 2100

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30 : (5.15...5.35) Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasina : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 6

#### BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 13.90...14.10

Del.guantity cm3/: 21.2...21.4

100 s: (20.9...21.7)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.7...6.0 Del.quantity cm3/ : 1.3...1.9 100 s: (1.0...2.2)

Spread cm3 : 0.6

100 s: (1.0)

## (B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.20...1.40 travel mm

rpm : 600 2nd speed

: 4.90...5.10 travel mm

rpm : 1075 3rd speed : 7.40...7.60 travel mm

rpm : 1100 4th speed

travel mm : 8.00...8.40

5th speed rpm : 1150

: 9.00...9.40 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1125 Speed

Rack travel in mm : 15.80...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

3rd pressure hPa : 1050 Rack travel in m: 14.00...14.10 \* 4th pressure hPa : 1150 Rack travel in m: 14.45...14.60 1st version rpm : 600 Speed Aneroid pressure h: 900 Del.quantity : 212.0...214.0 1000 : (209.0...217.0) 5th pressure hPa : cm3 : 5.00 1000 : (9.00) Spread Rack travel in m: 9.00...9.30 START CUT-OUT RATED SPEED 1/min : 220 (240) Speed 1st version Control lever FUEL DELIVERY CHARACTERISTICS position degrees: 116...124 Testing: 1st version 1st rack travel in: 13.80 Speed rpm : 1095...1110 Aneroid pressure h: 1450 rpm : 1050 Speed 2nd rack travel in: 4.00 Del.quantity cm3/: 231.0...234.0 1000 s: (228.0...237.0) rpm : 1170...1200 Speed 4th rack travel in: 1300 Spread cm3 : 8.00Speed rpm : 0.00...1.001000 s: (12.0) Aneroid pressure h: 1450 Speed rpm : 800 Del.quantity cm3/ : 235.0...239.0 1000 s: (232.0...242.0) LOW IDLE 1 Control Lever position degrees: 81...89 Spread cm3 : 8.00 1000 s: (12.0) Testing: Speed rpm : 200 Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 128.0...130.0 1000 s: (125.0...133.0) Minimum rack trave: 7.90 rpm : 300 Rack travel in mm : 5.70...6.00 cm3 : 8.00 Spread CONSTANT REGULATION 1000 s: (12.0) rpm : 300...450 Speed TORQUE CONTROL **BREAKAWAY** Dimension a mm : 0.30 2nd speed rpm : 1050 Rack travel in m: 14.80...15.00 1st version 1mm rack travel less than 3rd speed rpm : 800 Rack travel in m: 15.00...15.20 full load rack tr: 13.80 : 700 4th speed rpm Speed rpm : 1095...1110 Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test Speed rpm : 100 Del.quantity cm3/: 200.0...220.0 1st version Setting 1000 s: (196.0...224.0) rpm : 600 Speed Rack travel in mm : 200.00...220.00 hPa : 900 Pressure Rack travel mm : 13.90...14.10 Remarks: Measurement 1/min: 600 Speed \* Increase in control-rod travel with respect to setting at least 0.1 mm 1st pressure hPa : 300 Rack travel in m: 10.70...10.90 2nd pressure hPa : 550

Rack travel in m: 12.80...13.10

: 5.20...5.30 : (5.15...5.35) BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm Note remarks Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 Test sheet : DAF 11,7 k6 : 22.03.91 Edition Replaces : 18.2.91 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 402 646 894 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 1 Pump designation : PE6P120A320RS7194 EP type number : 0 412 626 834 BASIC SETTING Governor Governor design. : RQ250/1000PA936 1st speed rpm: 850 : 0 421 801 507 Governer no. Rack travel in mm : 13.70...13.80 Customer-spec. information Customer : DAF Del.quantity cm3/: 23.9...24.1 Engine : WS 295 100 s: (23.6...24.4) 1st version kW : 295.0 Spread cm3 : 0.5: 2000 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS 2nd speed rpm : 250.0 Rack travel in mm : 7.6...8.0 Test oil Del.quantity cm3/: 2.2...2.8 100 s: (1.9...3.1) Spread cm3 : 0.8 inlet temp. °C : 38...42 Overflow valve 100 s: (1.2) : 1 417 413 025 Inlet press., bar: 1.50 GUIDE SLEEVE POSITION Control-lever position Test nozzle holder Degree: -1 rpm : 550 assembly : 1 688 901 105 Speed Rack travel in mm: 15.20...16.40 Opening FULL LOAD DELIV. AT FULL LOAD STOP : 207...210 pressure, bar Orifice plate 1st version diameter mm : 0,8 Speed rpm : 850 Aneroid pressure h: 1000 : 239.0...241.0 Del.quantity 1000 : (236.0...244.0) Test lines : 1 680 750 015 : 5.00 Spread cm3 Outside diameter 1000 : (9.00) x Wall thickness : 6.00X1.50X600 x Length mm RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Set equal delivery quant. Setting point: per values Speed rpm Rack travel in mm: 15.8 BEGINNING OF DELIVERY Test pressure, bar: 25...27 Testing:

1st rack travel in: 12.70

rpm : 1035...1050 Speed 2nd rack travel in: 4.00 Speed rpm : 1130...1160 4th rack travel in: 1250 rpm : 0.00...1.40 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 250 Rack travel in mm : 7.0 Testing: rpm : 100 Speed Minimum rack trave: 8.20 rpm : 250 Speed Rack travel in mm : 6.90...7.10 Rack travel in mm : 2.00 Speed rpm : 345...385 TORQUE CONTROL Dimension a mm Torque control curve - 1st version rpm : 850 1st speed Rack travel in m: 14.70...14.80 2nd speed rpm : 1000 Rack travel in m: 14.60...14.80 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rom hPa : 1000 Pressure Rack travel mm : 13.70...13.80 Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 11.00...11.20 2nd pressure hPa : 460 Rack travel in m: 13.00...13.10 3rd pressure hPa : 310 Rack travel in m: 12.00...12.20 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: rpm : 600 Speed Del.quantity cm3/: 165.0...167.0 1000 s: (162.0...170.0) **BREAKAWAY** 

1mm rack travel less than

full load rack tr: 12.70

Speed rpm : 1035...1050

LOW IDLE

Speed rpm : 250

Rack travel in mm : 6.90...7.10

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

F24

1st version

Note remarks

Test sheet : DAF 11,7 k4 Edition : 22.03.91 Replaces : 16.11.90 Test oil : ISO-4113

Combination no. : 0 402 646 896

Injection pump

Pump designation : PE6P120A320RS7194 EP type number : 0 412 626 834

Governor

Governor design. : RQV250...1000PA939 : 0 421 813 829

Governer no.

Customer-spec. information Customer : DAF

: WS 295 Engine

: 295.0 1st version kW Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.25) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rom: 850

Rack travel in mm : 13.70...13.80

Del.quantity cm3/: 23.9...24.1

100 s: (23.6...24.4)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 7.6...8.0 Del.quantity cm3/ : 2.2...2.8 100 s: (1.9...3.1)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed 250

: 0.70...1.10 travel mm

2nd speed : 400 rpm

travel mm 2.40...3.20 3rd speed : 800 rpm

travel mm : 5.20...5.60

4th speed : 1000 rpm travel mm : 7.30...7.50

: 1300 5th speed rpm

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1125 Speed

Rack travel in mm: 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 850 Aneroid pressure h: 1000

: 239.0...241.0 Del.quantity

1000 : (236.0...244.0)

: 5.00 Spread cm3 1000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 115...123

Testina:

1st rack travel in: 12.70

Speed rpm : 1030...1040 2nd rack travel in: 4.00

rpm : 1140...1170 Speed

4th rack travel in: 1250

rpm : 0.00...1.40 Speed

LOW TDLE 1 Control Lever

position degrees: 81...89

Testing:

: 100 Speed rpm Minimum rack trave: 8.20 rpm : 250

Rack travel in mm : 6.90...7.10

CONSTANT REGULATION

rpm : 275...385 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speea rpm

: 600 Pressure hPa : 1000

Rack travel mm : 13.70...13.80

Measurement

1/min: 600 Speed

1st pressure hPa : -

Rack travel in m: 11.00...11.20

2nd pressure hPa : 460

Rack travel in m: 13.00...13.10
3rd pressure hPa : 310
Rack travel in m: 12.00...12.20

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 600 Speed

Del.quantity cm3/: 165.0...167.0 1000 s: (162.0...170.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.70

rpm : 1030...1040 Speed

LOW IDLE

: 250 Speed rpm

Rack travel in mm : 6.90...7.10

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

Note remarks

Test sheet : MB 11,1 c Edition : 28.03.91 : 1.2.91 Replaces Test oil : ISO-4113

Combination no. : 0 402 646 921

Injection pump

Pump designation : PE6P120A320LS7837 EP type number : 0 412 626 842

Governor

Governor design. : RQ300/1050PA972-3 Governer no. : 0 421 801 565

Customer-spec. information

Customer : MERCEDES-BENZ

: OM441 LA Engine

: 250.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

**Openina** 

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

: 8.00X2.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm : 20.00...21.00

: 6-3-5-2-4-1 Firing order

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \cdot : 0.50 (0.75)$ 

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.70...14.90

Del.guantity cm3/: 23.3...23.5

100 s: (23.0...23.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.6...6.2 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1000

Aneroid F. Del.quantity 1000 : 233.0...235.0

: (230.0...238.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rom

Rack travel in mm: 20.0

Testing: 1st rack travel in: 14.50 Speed rpm: 1090...1105 2nd rack travel in: 4.00 Speed rpm : 1145...1175 4th rack travel in: 1200 Speed rpm : 0.00...1.50 LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.9 Testing: Speed rpm : 200 Minimum rack trave: 7.70 Speed rpm : 300 Rack travel in mm : 5.60...6.20 Rack travel in mm : 2.00 rom : 380...420 TORQUE CONTROL 2nd speed rpm : 1050 Rack travel in m: 15.50...15.70 3rd speed rpm : 800 Rack travel in m: 15.60...15.80 Aneroid/Altitude

Compensator Test

1st version Settina Speed : 600 rpm Pressure hPa : 100 Rack travel mm : 14.70...14.90

Measurement

Speed 1/min: 600

1st pressure hPa : 200 Rack travel in m: 10.00...10.20

2nd pressure hPa :-600

Rack travel in m: 13.50...13.70 3rd pressure hPa : 1250

Rack travel in m: 14.80...15.00 \* 4th pressure hPa : 1450

Rack travel in m: 15.40...15.60

5th pressure hPa : -

Rack travel in m: 9.30...9.50

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1800 rpm : 1050

Del.quantity cm3/: 251.0...254.0

1000 s: (248.0...257.0)

Spread cm3 : 8.001000 s: (12.0)

Aneroid pressure h: 1800

Speed rpm: 800
Del.quantity cm3/: 250.0...254.0
1000 s: (247.0...257.0)

cm3 : 8.00 1000 s: (12.0) Spread

Aneroid pressure h: -Speed rpm

Del.quantity cm3/: 135.0...137.0 1000 s: (132.0...140.0)

Spread cm3 : 8.001000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.50

Speed rpm : 1090...1105

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

: MB 9,6 o 2 : 22.03.91 Test sheet Edition : 14.12.90 Replaces Test oil : ISO-4113

Combination no. : 0 402 646 922

Injection pump

Pump designation: PE6P120A320LS7834 EP type number : 0 412 626 841

Governor

Governor design. : RQ300/1050PA972-2 : 0 421 801 556 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

: 213.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 : (5.45...5.65) Prestroke mm

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.90...14.10

Del.guantity cm3/: 19.9...20.1

100 s: (19.6...20.4)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 6.4...7.0 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 800

Del.quantity : 199.0...201.0 1000 : (196.0...204.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 20.0 : 600

Testing: 1st rack travel in: 13.00 rpm : 1090...1105 Speed 2nd rack travel in: 4.00 rpm : 1175...1205 Speed 4th rack travel in: 1300 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.7 Testing: Speed rpm : 200 Minimum rack trave: 8.50 : 300 rpm Rack travel in mm : 6.40...7.00 Rack travel in mm: 2.00 : 380...420 Speed rom TORQUE CONTROL Dimension a mm rpm : 1050 2nd speed Rack travel in m: 14.00...14.20 3rd speed rpm : 800 Rack travel in m: 14.40...14.60 Aneroid/Altitude Compensator Test 1st version Setting

: 600 Speed rpm Pressure hPa : 800

: 13.00...13.20 Rack travel mm

Measurement Speed

1/min: 600

1st pressure hPa : 250
Rack travel in m: 9.40...9.60
2nd pressure hPa : 550
Rack travel in m: 12.20...12.40
3rd pressure hPa : 1050
Rack travel in m: 13.10...13.70

Rack travel in m: 13.10...13.30 \*

4th pressure hPa : -

Rack travel in m: 9.00...9.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1500

Speed rpm : 1050 Del.quantity cm3/ : 207.0...210.0

1000 s: (204.0...213.0)

Spread cm3 : 8.001000 s: (12.0)

Aneroid pressure h: 1500 : 800 Speed rpm

Del.quantity cm3/: 218.0...222.0 1000 s: (215.0...225.0)

cm3 : 8.00 Spread 1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500
Del.quantity cm3/ : 118.0...120.0
1006 s: (115.0...123.0)

cm3 : 8.00 Spread 1000 s: (12.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 13.00

rpm : 1090...1105 Speed

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

#### Note remarks

Test sheet : UNI 13,8 h : 22.03.91 : 1.3.91 Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 646 923

Injection pump

Pump designation : PE6P130A720RS7225 EP type number : 0 412 636 817

Governor

Governor design. : RQV300...900PA946

Governer no.

: 0 421 813 845

Customer-spec. information

Customer

: IVECO-UNIC

Engine

: 8210.42.061

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15)

Rack travel in mm : 11.50...12.50

G03

Firing order : 1-5-3-5-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm: 900

Rack travel in mm : 11.60...11.70

Del.quantity cm3/: 27.0...27.3

100 s: (26.6...27.6)

cm3 : 0.6Spread

100 s: (1.0)

2nd speed rom : 300.0Rack travel in mm: 3.4...3.8

Del.quantity cm3/: 1.9...2.5 100 s: (1.5...2.9)

cm3 : 1.0Spread 100 s: (1.4)

# (B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 945 1st speed

travel mm : 8.40...8.60

rpm : 300 2nd speed : 1.00...1.40 travel mm

3rd speed rpm

3.30...3.90 travel mm

500

: 700 4th speed rom

: 5.50...5.90 travel mm

rpm : 1200 5th speed

: 11.00...12.00 travel mm

## GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 935 Speed

Rack travel in mm : 15.20...17.80

#### FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 900

Aneroid pressure h: 900

Del.quantity : 270.0...276.5)

Spread cm3 : 6.00 1000 : (10.00)

RATED SPEED

1st version Control Lever

position degrees: 72...80

Testina:

1st rack travel in: 10.60 rpm : 940...950 Speed

2nd rack travel in: 4.00

rpm : 1010...1040 Speed

4th rack travel in: 1200

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control lever

position degrees: 76...84

Testina:

Speed rpm : 100 Minimum rack trave: 5.10 Speed rpm : 300 Rack travel in mm : 3.50...3.70

CONSTANT REGULATION

rpm : 320...440 Speed

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 500 Pressure hPa : 900

Rack travel mm : 11.60...11.70

Measurement

Speed  $1/\min : 500$ 

1st pressure hPa : -

Rack travel in m: 8.90...9.10

2nd pressure hPa : 350
Rack travel in m: 11.00...11.10
3rd pressure hPa : 285
Rack travel in m: 9.50...9.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 500
Del.quantity cm3/ : 285.0...292.0
1000 s: (281.5...295.5)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 202.0...205.0 1000 s: (198.5...208.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.60

rpm : 940...950 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 300.0...330.0 1000 s: (296.0...334.0)

LOW IDLE

Speed rpm : 300
Rack travel in mm : 3.40...3.80
Del.quantity cm3/: 19.0...25.0

1000 s: (15.0...29.0)

cm3 : 10.00 Spread

1000 s: (14.00)

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

Note remarks

Test sheet Edition : MB 11,1 b : 28.03.91 : 25.1.91 Replaces Test oil : ISO-4113

Combination no. : 0 402 646 925

Injection pump

Pump designation : PE6P120A320LS7837 EP type number : 0 412 626 842

Governor

Governor design. : RQV300...950PA797-20

: 0 421 813 893 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M441 LA

1st version kW : 250.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

**Opening** 

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm : 20.00...21.00

: 6-3-5-2-4-1 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm : 600

Rack travel in mm : 14.70...14.90

Del.quantity cm3/: 23.3...23.5

100 s: (23.0...23.8)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.6...6.2 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6100 s: (1.6)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL 300 1st speed

1.00...1.50 travel mm

2nd speed rpm : 567 : 4.40...4.90 travel mm

3rd speed rpm : 780

: 6.10...6.60 travel mm

rpm : 1009 4th speed

: 8.30...8.80 travel mm

rpm : 1190 5th speed

: 11.00...12.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1025 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 600 Aneroid pressure h: 1000 Del.quantity : 233.0...235.0 1000 : (230.0...238.0) cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 120...128 Testing: 1st rack travel in: 14.50 rpm : 990...1000 Speed 2nd rack travel in: 4.00 rpm : 1085...1115 Speed 4th rack travel in: 1200 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 82...90 Testing: Speed rpm Minimum rack trave: 7.70 Speed rpm : 300 Rack travel in mm : 5.60...6.20 CONSTANT REGULATION Speed rpm : 300...450 TORQUE CONTROL Dimension a mm : 0.10 2nd speed rpm : 950 Rack travel in m: 15.50...15.70 3rd speed rpm : 800 Rack travel in m: 15.60...15.80 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 1000 Pressure Rack travel mm : 14.70...14.90 Measurement 1/min: 600 Speed 1st pressure hPa : 200 Rack travel in m: 10.00...10.20 2nd pressure hPa : 600 Rack travel in m: 13.50...13.70 3rd pressure hPa : 1250

Rack travel in m: 14.80...15.00 \* 4th pressure hPa : 1450 Rack travel in m: 15.40...15.60 5th pressure hPa : -Rack travel in m: 9.30...9.50 START CUT-OUT 1/min: 240 (260) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1700 rpm : 950 Del.quantity cm3/: 251.0...254.0 1000 s: (248.0...257.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1700 Speed rpm : 800 Del.quantity cm3/ : 250.0...254.0 1000 s: (247.0...257.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 135.0...137.0 1000 s: (132.0...140.0) Spread cm3 : 8.00 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 14.50 rpm : 990...1000 Speed STARTING FUEL DELIVERY Speed rpm Del.quantity cm3/: 250.0...270.0 1000 s: (246.0...274.0) Remarks: \* Increase in control-rod travel with respect to setting at least 0.1 mm

Note remarks

Test sheet : MB 9,6 o 4 Edition : 19.03.91 Replaces : 27.2.91

Test oil : ISO-4113

Combination no. : 0 402 646 930

Injection pump

Pump designation : PE6P120A320LS7834 EP type number : 0 412 626 841

Governor

Governor design. : RQ300/1050PA972-7

: 0 421 801 583 Governer no.

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M401 LA

1st version kW : 230.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

**Overflow** 

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.50...5.60

: (5.45...5.65)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 15.20...15.40

Del.quantity cm3/: 23.1...23.3

100 s: (22.8...23.6)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 6.7...7.1

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 1000 Del.quantity : 231.0...233.0 1000 : (228.0...236.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm : 20.0

Testing: 1st rack travel in: 14.30 rpm : 1090...1105 Speed 2nd rack travel in: 4.00 Speed rpm: 1180...1210 4th rack travel in: 1300 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.9 Testing: rpm : 200 Speed Minimum rack trave: 8.70 rpm : 300 Speed Rack travel in mm : 6.70...7.10 Rack travel in mm : 2.00 Speed : 380...420 rom TORQUE CONTROL Dimension a mm :? 2nd speed rpm : 1050 Rack travel in m: 15.30...15.50 3rd speed rpm : 800 Rack travel in m: 15.90...16.10 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rom hPa : 1000 Pressure Rack travel mm : 15.20...15.40 Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 10.20...10.40 2nd pressure hPa : 750 31-4th pressure hPa : -Rack travel in m: 9.70...10.00 FUEL DELIVERY CHARACTERISTICS

Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1700 Speed rpm: 800 Del.quantity cm3/: 245.0...248.0 1000 s: (242.0...251.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 122.0...124.0 1000 s: (119.0...127.0) cm3 : 8.00Spread 1000 s: (12.0)

## **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 14.30 Speed rpm : 1090...1105

## Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

1st version

Aneroid pressure h: 1700

Speed rpm : 1050
Del.quantity cm3/: 232.0...235.0
1000 s: (229.0...238.0)

Note remarks

: DAF 8,7 b : 22.03.91 : 1.3.91 Test sheet Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 646 933

Injection pump

Pump designation : PE6P12DA32DRS7228 EP type number : 0 412 626 845

Governor

Governor design. : RQ275/1150PA987 : 0 421 801 578 Governer no.

Customer-spec. information : DAF Customer

Engine : RS 222

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (5.15...5.35)

Rack travel in mm : 13.80...14.80

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasina

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 5.50...5.70 & maximum rack tra: 13.8...14.8 Difference ° CS : 3.25...4.75

BASIC SETTING

rpm: 1000 1st speed

Rack travel in mm: 14.30...14.40

Del.quantity cm3/: 17.7...17.9

100 s: (17.4...18.2)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 275.0 2nd speed

Rack travel in mm : 6.6...6.8 Del.quantity cm3/ : 1.3...1.9

100 s: (1.0...2.2) cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -1

rpm : 550 Speed Rack travel in mm : 15.40...16.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000Aneroid pressure h: 1000

Del.quantity : 177.0...179.0 1000 : (174.0...182.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version

Setting point:

Speed rpm : 550 Rack travel in mm: 16.0

**GD9** 

Testing: 1st rack travel in: 13.30 Speed rpm : 1185...1200 2nd rack travel in: 4.00 Speed rpm: 1270...1300 4th rack travel in: 1450 rpm : 0.00...1.40 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 275 Rack travel in mm: 5.6 Testing: rpm : 100 Speed Minimum rack trave: 7.10 rpm : 275 Rack travel in mm : 5.50...5.70 Rack travel in mm : 2.00 Speed rpm : 330...370 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 1000 Pressure : 14.30...14.40 Rack travel mm Measurement Speed  $1/\min : 600$ 1st pressure hPa : -Rack travel in m: 12.60...12.80 2nd pressure hPa : 470 Rack travel in m: 13.90...14.00 3rd pressure hPa : 350 Rack travel in m: 13.00...13.20 FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/: 110.0...120.0 1000 s: (106.0...124.0) cm3 : 10.00 Spread 1000 s: (14.00 Aneroid pressure h: rpm : 600

**BREAKAWAY** 

Speed

1st version

Del.quantity cm3/: 141.0...143.0 1000 s: (138.0...146.0)

G10

1mm rack travel less than

full load rack tr: 13.30

rpm : 1185...1200 Speed

LOW IDLE

Speed rpm : 275
Rack travel in mm : 5.50...5.70

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 start of delivery

#### Note remarks

Test sheet : DAF 11,7 n : 19.03.91 Edition : 1.3.91 Replaces Test oil : ISO-4113

Combination no. : 0 402 646 936

Injection pump

Pump designation : PE6P120A320RS7230 : 0 412 626 843 EP type number

Governor

Governor design. : RQV250...1000PA990K

Governer no. : 0 421 815 274

Customer-spec. information Customer : DAF

: WS 315 Engine

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening .

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 089

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15) Rack travel in mm: 13.80...14.80

RATED SPEED

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 550

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 27.7...27.9

100 s: (27.4...28.2)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 250.0 2nd speed Rack travel in mm: 5.8...6.0 Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3)

Spread cm3 : 0.8 100 s: (1.2)

## (B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 250

: 1.30...1.70 travel mm

rpm : 285 2nd speed

: 2.10...2.50 travel mm

rpm : 1030 3rd speed

: 9.60...10.00 travel mm

4th speed : 1145 rpm

: 11.20...11.40 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1070

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 550 Aneroid pressure h: 1500

: 277.0...279.0 Del.quantity

1000 : (274.0...282.0)

Spread cm3 : 5.00

1000 : (9.00)

G11

1st version Control lever position degrees: 115...123 Testing: 1st rack travel in: 13.30 rpm : 1030...1040 Speed 2nd rack travel in: 4.00 rpm : 1130...1160 Speed 4th rack travel in: 1275 rpm : 0.00...1.40Speed LOW IDLE 1 Control lever position degrees: 70...78 Testina: Speed rpm : 100 Minimum rack trave: 7.40 rpm : 250 Speed Rack travel in mm: 5.80...6.00
Rack travel in mm: 2.00 rpm : 355...395 Speed CONSTANT REGULATION Speed : 285...335 rom TORQUE CONTROL Dimension a mm :? Torque control curve - 1st version 1st speed rpm : 550 Rack travel in m: 12.80...12.90 2nd speed rpm : 700 Rack travel in m: 13.10...13.30 3rd speed rpm : 850 Rack travel in m: 13.90...14.10 4th speed rpm : 980
Rack travel in m: 14.70...14.90 Aneroid/Altitude Compensator Test 1st version Setting Speed : 980 rpm Pressure hPa : 1500 Rack travel mm : 14.40...14.50 Measurement 1/min: 980 Speed 1st pressure hPa : -Rack travel in m: 8.80...9.00 2nd pressure hPa : 600 Rack travel in m: 11.80...11.90
3rd pressure hPa : 330
Rack travel in m: 10.00...10.20 FUEL DELIVERY CHARACTERISTICS

#### **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 13.30 Speed rom : 1030...1040

# LOW IDLE

Remarks:

Note remarks

Test sheet

: DAF 11,7 L2 : 22.03.91

Edition

Replaces

Test oil

: ISO-4113

Combination no. : 0 402 646 941

Injection pump

Pump designation : PE6P12OA32ORS72187

EP type number

: 0 412 626 847

Governor

Governor design. : RQ250/1000PA936-1

Governer no.

: 0 421 801 508

Customer-spec. information Customer

: DAF

Engine

: WS 222 G

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 019

Openina .

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,8

Test lines

: 1 680 750 075

Outside diameter

x Wall thickness

x Length mm

: 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.30...5.40

: (5.25...5.45)

Rack travel in mm : 13.10...14.10

G13

Firing order

: 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 4.90...5.10

& maximum rack tra: 13.1...14.1

Difference ° CS : 2.25...3.75

BASIC SETTING

1st speed

Spread

Spread

rpm: 850

Rack travel in mm : 13.60...13.70

Del.quantity cm3/: 19.6...19.8

100 s: (19.3...20.1)

cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 250.0 Rack travel in mm : 6.5...6.7 Del.quantity cm3/ : 1.4...2.0

100 s: (1.1...2.3)

cm3 : 0.8

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 550 Rack travel in mm : 15.20...16.40

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 850

Aneroid pressure h: 1000 Del.quantity : 190.0....201.0)

Spread

cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm

Rack travel in mm: 15.8

Testing:

1st rack travel in: 12.60

rpm : 1035...1050 Speed

2nd rack travel in: 4.00

Speed rpm : 1140...1170 4th rack travel in: 1250

Speed rpm : 0.00...2.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 250 Rack travel in mm : 5.0

Testina:

rpm : 100 Speed Minimum rack trave: 6.50

Speed rpm : 250
Rack travel in mm : 4.90...5.10
Rack travel in mm : 2.00
Speed rpm : 310...350

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 850

Rack travel in m: 14.60...14.70

2nd speed rpm : 990

Rack travel in m: 14.50...14.70

Aneroid/Altitude Compensator Test

1st version Setting

: 600 Speed rpm hPa : 1000 Pressure

Rack travel mm : 13.60...13.70

Measurement

Speed 1/min: 600

1st pressure hPa : -

Rack travel in m: 12.30...12.50

2nd pressure hPa : 390

Rack travel in m: 13.30...13.40

3rd pressure hPa : 310 Rack travel in m: 12.70...12.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

rpm : 600

Del.quantity cm3/: 161.0...163.0 1000 s: (158.0...166.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 12.60

Speed rpm : 1035...1050

LOW IDLE

Speed : 250 rpm

Rack travel in mm : 4.90...5.10

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

## Note remarks

: MB 11,1 d Test sheet Edition : 19.03.91 Replaces : 1.3.91 Test oil : ISO-4113

Combination no. : 0 402 646 942

Injection pump

Pump designation : PE6P12OA32OLS7837 EP type number : 0 412 626 842

Governor

Governor design: RQ300/1050PA993 : 0 421 801 581 Governer no.

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M441 LA

1st version kW : 250.0 Rated speed : 2100

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 6

# BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.60...13.80

Del.quantity cm3/: 21.1...21.3

100 s: (20.8...21.6)

cm3 : 0.5Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.7...6.0 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600

Aneroid pressure h: 800

Del.quantity : 211.0...216.0)

Spread

cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 20.0

Testina: 1st rack travel in: 13.90 Speed rpm : 1090...1105 2nd rack travel in: 4.00 Speed rpm : 1145...1175 4th rack travel in: 1200 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 5.8 Testing: Speed rpm : 200 Minimum rack trave: 7.70 Speed rpm : 300
Rack travel in mm : 5.70...6.00
Rack travel in mm : 2.00 rpm : 380...420 Speed TORQUE CONTROL Dimension a mm rpm : 1050 2nd speed Rack travel in m: 14.90...15.10 3rd speed rpm : 800 Rack travel in m: 15.00...15.20 Aneroid/Altitude Compensator Test 1st version Settina Speed : 600 rpm hPa : 800 Pressure Rack travel mm : 13.60...13.80 Measurement 1/min: 600 Speed 1st pressure hPa : 200 Rack travel in m: 10.00...10.20
2nd pressure hPa : 500
Rack travel in m: 12.70...12.90
3rd pressure hPa : 1000
Rack travel in m: 13.90...14.10
4th pressure hPa : 1200 Rack travel in m: 14.50...14.70 5th pressure hPa : -Rack travel in m: 8.80...9.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1500

rom : 1050

Del.quantity cm3/: 242.0...245.0 1000 s: (239.0...248.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1500 Speed rpm: 800 Del.quantity cm3/: 244.0...248.0 1000 s: (241.0...251.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 135.0...137.0 1000 s: (132.0...140.0) cm3 : 8.00Spread 1000 s: (12.0) **BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 13.90 rpm : 1090...1105 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 220.0...240.0 1000 s: (216.0...244.0)

Remarks:

Speed

Note remarks

Test sheet : MB 11,0 t10 Edition : 19.03.91 Replaces : 1.2.91 Test oil : ISO-4113

Combination no. : 0 402 646 943

Injection pump

Pump designation : PE6P120A320S7808 EP type number : 0 412 626 816

Governor

Governor design. : RQV300...950PA795-28

Governer no. : 0 421 813 925

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M441 LA Engine

1st version kW : 250.0 Rated speed : 1900

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35)

Rack travel in mm : 20.00...21.00

Firing order : 6-3-5-2-4-1

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 13.90...14.10

Del.quantity cm3/: 22.1...22.3

100 s: (21.8...22.6)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.7...6.0 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

1.00...1.50 travel mm

2nd speed rpm : 567

: 4.40...4.90 travel mm

3rd speed : 780 rpm : 6.10...6.60 travel mm

: 1009 4th speed rpm

: 8.30...8.80 travel mm

5th speed : 1092 rpm

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

Speed

rpm : 1090

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 600 Aneroid pressure h: 950 Del.quantity : 221.0...223.0 1000 : (218.0...226.0) : 5.00 Spread cm3 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 95...103 Testing: 1st rack travel in: 14.10 Speed rpm : 990...1000 2nd rack travel in: 4.00 rom : 1065...1095 Speed 4th rack travel in: 1150 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 69...77 Testing: Speed rom Minimum rack trave: 7.70 rpm : 300 Speed Rack travel in mm : 5.70...6.00 CONSTANT REGULATION Speed rpm : 300...500 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 900 Pressure : 13.90...14.10 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 10.70...10.90 2nd pressure hPa : 600
Rack travel in m: 12.80...13.00
3rd pressure hPa : 1150
Rack travel in m: 14.20...14.40

1st version Aneroid pressure h: 1550 : 950 Speed rom Del.quantity cm3/: 251.0...254.0 1000 s: (248.0...257.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1550 Speed rpm : 750 Del.quantity cm3/ : 242.0...246.0 1000 s: (239.0...249.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 138.0...140.0 1000 s: (135.0...143.0) cm3 : 8.00 Spread 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 14.10 Speed rpm : 990...1000 STARTING FUEL DELIVERY rpm Del.quantity cm3/: 210.0...230.0 1000 s: (206.0...234.0) Remarks:

4th pressure hPa : 1250

5th pressure hPa : -

Rack travel in m: 14.70...14.90

Rack travel in m: 9.20...9.50

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : UNI 13,8 h1 Edition : 22.03.91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 946

Injection pump

Pump designation : PE6P130A720RS7225 EP type number : 0 412 636 817

Governor

Governor design. : RQV300...975PA1002K

: 0 421 815 279 Governer no.

Customer-spec. information Customer : IVECO-UNIC

: 8210.42.009 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 11.50...12.50

G19

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 975

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 26.9...27.2

100 s: (26.5...27.5)

cm3 : 0.6Spread

100 s: (1.0)

rpm : 300.02nd speed Rack travel in mm : 3.4...3.8 Del.quantity cm3/ : 1.9...2.5

100 s: (1.5...2.9) cm3 : 1.0

Spread 100 s: (1.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1020

travel mm : 9.90...10.10

2nd speed rpm : 300

: 1.60...2.00 travel mm

3rd speed rpm : 400

: 3.40...4.00 travel mm

4th speed rpm : 600

: 5.20...5.60 travel mm

rpm : 1250 5th speed

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 945 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 975 Speed

Aneroid pressure h: 900

Del.quantity ; 269.0...272.0

1000 : (265.5...275.5)

Spread

cm3 : 6.00

1000 : (10.00)

RATED SPEED

1st version

Control Lever

position degrees: 114...122

Testing:

1st rack travel in: 10.90

Speed rpm: 1015...1025 2nd rack travel in: 4.00

Speed rpm : 1075...1105 4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1 Control lever

position degrees: 71...79

Testing:

Speed : 100 rpm Minimum rack trave: 5.00

rpm : 300

Rack travel in mm : 3.50...3.70

CONSTANT REGULATION

rpm : 280...400 Speed

TORQUE CONTROL

Dimension a mm

Torque control curve - 1st version

1st speed rpm : 975

Rack travel in m: 11.90...12.00

2nd speed rpm : 800

Rack travel in m: 11.50...11.70

3rd speed rpm : 500

Rack travel in m: 10.50...10.90

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 975 rpm Pressure hPa : 900

: 11.90...12.00 Rack travel mm

Measurement

Speed 1/min: 975

1st pressure hPa : -

Rack travel in m: 9.10...9.30

2nd pressure hPa : 490

Rack travel in m: 11.20...11.30

3rd pressure hPa : 350

Rack travel in m: 9.80...10.00

START CUT-OUT

Speed

1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 500 Del.quantity cm3/ : 245.0...253.0 1000 s: (241.5...256.5)

Aneroid pressure h: -

rpm\_ : 500 Speed

Del.quantity cm3/: 196.0...199.0

1000 s: (192.5...202.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 10.90

rpm : 1015...1025 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 195.0...225.0

1000 s: (191.0...229.0)

LOW IDLE

**beec**2 rpm : 300

Rack travel in mm: 3.40...3.80

Del.quantity cm3/: 19.0...25.0 1000 s: (15.0...29.0)

cm3 : 10.00 Spread

1000 s: (14.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

## Note remarks

: UNI 13,8 h2 : 22.03.91 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 646 947

Injection pump

Pump designation : PE6P130A720RS7225 EP type number : 0 412 636 817

Governor

: RQV300...950PA1002-1 Governor design.

: 0 421 815 280 Governer no.

Customer-spec. information : IVECO-UNIC Customer

: 8210.42.400 Engine

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 105

**Opening** 

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm

: (4.95...5.15)

Rack travel in mm : 12.50...13.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

### BASIC SETTING

1st speed rpm: 950

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 29.8...30.1

100 s: (29.4...30.4)

Spread cm3 : 0.6

100 s: (1.0)

2nd speed rpm : 300.0Rack travel in mm : 3.9...4.3 Del.quantity cm3/ : 1.9...2.5

100 s: (1.5...2.9)

Spread cm3 : 1.0100 s: (1.4)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 995 1st speed

: 8.50...8.70 travel mm

rpm : 300 2nd speed

: 1.00...1.40 travel mm

3rd speed : 500 rpm

: 3.30...3.90 : 750 travel mm

4th speed rpm

5.80...6.20 travel mm

rpm : 1300 5th speed

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1025 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 950 Speed

Aneroid pressure h: 900

Del.quantity : 290.0...304.5)

Spread

cm3 : 6.00 1000 : (10.00)

RATED SPEED

1st version Control lever

position degrees: 110...118

Testing:

1st rack travel in: 11.80

rpm : 990...1000 Speed

2nd rack travel in: 4.00

: 1090...1120 Speed rom

4th rack travel in: 1300

Speed rpm : 0.00...1.00

LOW IDLE 1 Control Lever

position degrees: 68...76

Testina:

Speed : 100 rom Minimum rack trave: 5.60 rpm : 300

Rack travel in mm : 4.00...4.20

CONSTANT REGULATION

rpm : 340...460 Speed

TORQUE CONTROL

Dimension a mm :?

Torque control curve - 1st version

1st speed rpm : 950

Rack travel in m: 12.80...12.90

2nd speed rpm : 750

Rack travel in m: 12.60...12.90 3rd speed rpm : 500

Rack travel in m: 11.40...11.70

Aneroid/Altitude

Compensator Test

1st version

Setting

: 950 Speed rpm hPa : 900 Pressure

Rack travel mm : 12.80...12.90

Measurement

1/min: 950 Speed

1st pressure hPa : -

Rack travel in m: 9.30...9.50
2nd pressure hPa : 560
Rack travel in m: 11.90...12.00

3rd pressure hPa : 350

Rack travel in m: 10.10...10.30

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900

Speed rpm : 500

Del.quantity cm3/: 268.0...276.0

1000 s: (263.5...279.5)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 197.0...200.0 1000 s: (193.5...203.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.80

Speed rpm : 990...1000

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 195.0...225.0

1000 s: (191.0...229.0)

LOW IDLE

Speed rpm : 300 Rack travel in mm : 3.90...4.30 Del.quantity cm3/: 19.0...25.0

1000 s: (15.0...29.0)

Spread cm3 : 10.001000 s: (14.00)

Remarks:

Setting and blocking of pointer of start-of-delivery sensor on cyl. 1

start of delivery

#### Note remarks

Test sheet : MB 14,7 a10 : 19.03.91 Edition : 30.3.90 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 833

Injection pump

Pump designation: PE8P120A320LS7801-1 EP type number : 0 412 628 818

Governor

Governor design. : RQV350...1050PA866-3

Governer no. : 0 421 813 703

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 A

: 260.0 1st version kW : 2100 Rated speed

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00X2.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order

: 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

### BASIC SETTING

1st speed rom : 1050

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 17.8...18.0

100 s: (17.5...18.3)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm : 5.6...6.0

Del.quantity cm3/: 1.5...2.1

100 s: (1.2...2.4) cm3 : 0.6

Spread 100 s: (1.0)

# (B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.20...1.40

2nd speed rpm : 600

: 4.90...5.10 travel mm rpm : 1100

3rd speed

: 8.00...8.50 travel mm

rpm : 1170 4th speed

: 9.20...9.80 travel mm

## GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1090 Speed

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1050Speed Aneroid pressure h: 1100 : 178.0...180.0 Del.quantity 1000 : (175.0...183.0) : 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 118...126 Testing: 1st rack travel in: 11.80 rpm : 1090...1100 Speed 2nd rack travel in: 4.00 rpm : 1160...1190 Speed 4th rack travel in: 1300 rom : 0.00...1.50Speed LOW IDLE 1 Control lever position degrees: 67...75 Testing: Speed rpm : 250 Minimum rack trave: 7.30 rpm : 350 Rack travel in mm : 5.60...5.80 CONSTANT REGULATION rom : 350...550 Speed TORQUE CONTROL Dimension a mm : 1.60 Torque control curve - 1st version 1st speed rpm : 1050
Rack travel in m: 12.80...12.90
2nd speed rpm : 750 Rack travel in m: 14.40...14.60 rpm : 950 3rd speed Rack travel in m: 13.50...13.60 4th speed rpm : 830 Rack travel in m: 14.30...14.50 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm Pressure hPa : -: 11.20...11.50 Rack travel mm

Rack travel in m: 11.90...12.10 2nd pressure hPa : 600 Rack travel in m: 13.60...13.80 START CUT-OUT Speed 1/min : 270 (250) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 Speed rpm : 700 Del.quantity cm3/ : 209.0...213.0 1000 s: (206.0...216.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1100 : 1050 rpm Del.quantity cm3/: 152.0...154.0 \* 1000 s: (149.0...157.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 138.0...140.0 1000 s: (135.0...143.0) cm3 : 8.00Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.80 rpm : 1090...1100 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 180.0...200.0 1000 s: (176.0...204.0) Remarks: \* = Set at reduced-delivery stop.

Measurement

Speed

1/min: 600

1st pressure hPa : 420

#### Note remarks

: MB 14,7 a21 : 19.03.91 Test sheet Edition : 1.2.90 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 882

Injection pump

Pump designation : PE8P120A320LS7801 EP type number : 0 412 628 806

Governor

Governor design. : RQV300...950PA797-14

Governer no. : 0 421 813 842

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 A

: 269.0 1st version kW Rated speed : 1900

# TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

#### BASIC SETTING

1st speed rpm : 500

Rack travel in mm : 14.00...14.20

Del.quantity cm3/: 20.2...20.4

100 s: (19.9...20.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0

Rack travel in mm : 6.0...6.4 Del.quantity cm3/ : 1.2...1.8

100 s: (0.9...2.1) Spread cm3 : 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

travel mm : 1.10...1.50 2nd speed 600 rpm

4.80...5.30 travel mm

3rd speed 950 rom

: 7.60...8.10 travel mm

4th speed : 1050 rpm

: 9.00...9.50 travel mm

5th speed 1100 r'pm

: 9.90...10.40 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 990 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version rpm : 500 Speed Aneroid pressure h: 800 : 202.0...204.0 Del.quantity 1000 : (199.0...207.0) cm3 : 5.00 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 117...125 Testing: 1st rack travel in: 11.90 rpm : 990...1000 Speed 2nd rack travel in: 4.00 rpm : 1060...1090 Speed 4th rack travel in: 1200 rpm : 0.00...1.00 Speed LOW IDLE 1 Control Lever position degrees: 84...92 Testing: : 200 Speed rom Minimum rack trave: 8.00 : 300 Speed rpm Rack travel in mm : 6.00...6.40 CONSTANT REGULATION rpm : 300...500 Speed TORQUE CONTROL : 1.30 Dimension a mm : 950 2nd speed rpm Rack travel in m: 12.90...13.10 : 800 3rd speed rpm Rack travel in m: 14.20...14.40 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 800 Pressure : 14.00...14.20 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 11.80...12.00

2nd pressure hPa : 500 Rack travel in m: 13.30...13.60

3rd pressure hPa : 950 Rack travel in m: 14.10...14.20 \* 4th pressure hPa : -Rack travel in m: 10.60...11.00 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1150 rpm : 950 Speed Del.quantity cm3/: 188.0...191.0 1000 s: (185.0...194.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: 1150 Speed : 750 rpm Del.quantity cm3/: 211.0...214.0 1000 s: (208.0...217.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -: 500 Speed rpm Del.quantity cm3/: 134.0...136.0 1000 s: (131.0...139.0) cm3 : 8.00 Spread 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 11.90 rpm : 990...1000 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 175.0...190.0 1000 s: (171.0...194.0) Remarks: \* Increase in control-rod travel with

respect to setting at least 0.1 mm

Note remarks

: MB 14,7 t 1 : 19.03.91 Test sheet Edition : 16.1.91 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 889

Injection pump

Pump designation : PE8P120A320LS7816 EP type number : 0 412 628 829

Governor

Governor design. : RQ300/950PA932-2 Governer no. : 0 421 801 526

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

1st version kW : 362.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

: 8.00x2.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35) Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.60...14.80

Del.quantity cm3/: 25.5...25.7

100 s: (25.2...26.0)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.9...6.5 Del.quantity cm3/ : 1.3...1.9

100 s: (1.0...2.2)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1000

Del.quantity : 255.0...257.0 1000 : (252.0...260.0)

cm3 : 6.00

1000 : (9.00)

RATED SPEED

Spread

1st version

Setting point:

Speed : 600 rpm

Rack travel in mm: 20.0 Testina: 1st rack travel in: 14.20 rpm : 990...1005 Speed 2nd rack travel in: 4.00 rpm : 1070...1100 Speed 4th rack travel in: 1150 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 6.2 Testina: Speed : 200 **MC** Minimum rack trave: 7.80 Speed : 300 mon Rack travel in mm : 5.90...6.50 Rack travel in mm: 2.00 : 380...420 Speed rpm TORQUE CONTROL Dimension a mm : 0.90 : 950 2nd speed rpm Rack travel in m: 15.20...15.40 3rd speed rpm : 800 Rack travel in m: 15.50...15.70 Speed Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rom Pressure hPa : 1000 : 14.60...14.80 Rack travel mm Measurement Speed 1/min: 600 1st pressure hPa : 350
Rack travel in m: 11.60...11.80
2nd pressure hPa : 700
Rack travel in m: 13.80...14.00 3rd pressure hPa : 1200 Rack travel in m: 14.80...15.00 4th pressure hPa : 1300 Rack travel in m: 15.20...15.40 5th pressure hPa : -Rack travel in m: 10.20...10.50 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600 Speed rom : 950

Del.quantity cm3/: 266.0...269.0 1000 s: (263.0...272.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1600 Speed : 800 rpm Del.quantity cm3/: 267.0...271.0 1000 s: (264.0...274.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -Speed rpm: 500
Del.quantity cm3/: 141.0...143.0
1000 s: (138.0...146.0) Spread cm3 : 8.00 1000 s: (12.0)

## BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 14.20 rpm : 990...1005 Speed

STARTING FUEL DELIVERY

rpm Del.quantity cm3/: 240.0...260.0 1000 s: (236.0...264.0)

Remarks:

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BOSCH INJ. PUMP TEST SPECIFICATIONS Test pressure, bar: 25...27 Note remarks : 5.20...5.30 Prestroke mm : (5.15...5.35) Test sheet : MB 14,7 j 1 Rack travel in mm : 20.00...21.00 Edition : 19.03.90 : 8- 7- 2- 6- 3- 5-Firing order Replaces Test oil : ISO-4113 Combination no. : 0 402 648 898 Phasing : 0-45-90-135-186-225-Injection pump 270-315 Pump designation : PE8P120A320LS7816 Tolerance + - ° : 0.50 (0.75)EP type number : 0 412 628 829 Governor Time to cyl. no. : 8 Governor design. : RQ300/950PA700 BASIC SETTING Customer-spec. information Customer : MERCEDES-BENZ 1st speed rpm: 600 : 0M442 LA Rack travel in mm : 14.60...14.80 Engine : 362.0 1st version kW Del.quantity cm3/: 25.4...25.6 : 1900 Rated speed 100 s: (25.1...25.9) TEST BENCH REQUIREMENTS Spread cm3 : 0.6Test oil inlet temp. °C : 38...42 100 s: (0.9) Overflow valve rpm : 300.02nd speed : 1 417 413 025 Rack travel in mm: 5.9...6.5 Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5) Indet press., bar: 1.50 Spread cm3 : 0.6Overflow 100 s: (1.0) quantity min. 1/h: 100...120 GUIDE SLEEVE POSITION Test nozzle holder Control-lever position : 1 688 901 019 assembly Degree: -2 rpm : 600 Rack travel in mm : 19.20...20.80 Opening pressure, bar : 207...210 FULL LOAD DELIV. AT FULL LOAD STOP Orifice plate diameter mm : 0,8 1st version Speed rpm : 600 Aneroid pressure h: 1000 Del.quantity : 254.0...259.0) Test lines : 1 680 750 067 Outside diameter : 6.00 Spread cm3 1000 : (9.00) x Wall thickness : 6.00x1.50x1000 x Length mm RATED SPEED (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. per values Setting point: : 600 rpm BEGINNING OF DELIVERY Rack travel in mm: 20.0

H01

Testina: 1st rack travel in: 14.20 rpm : 990...1005 Speed 2nd rack travel in: 4.00 rpm : 1070...1100 Speed 4th rack travel in: 1150 Speed rpm : 0.00...1.50LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 6.2 Testing: Speed rpm : 200 Minimum rack trave: 7.80 Speed rpm : 300 Rack travel in mm : 5.90...6.50 Rack travel in mm : 2.00 rpm : 380...420 Speed TORQUE CONTROL Dimension a mm : 0.90 2nd speed rpm : 950 Rack travel in m: 15.20...15.40 3rd speed rpm : 800 Rack travel in m: 15.50...15.70 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600 Speed rpm : 950 Del.quantity cm3/ : 270.0...273.0 1000 s: (267.0...276.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1600 Speed : 800 rpm Del.quantity cm3/: 270.0...274.0 1000 s: (267.0...277.0) Spread cm3: 8.00 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 145.0...147.0 1000 s: (142.0...150.0) Spread cm3 : 8.00 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 14.20

rpm : 990...1005

Speed

H<sub>0</sub>2

## STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 240.0...260.0 1000 s: (236.0...264.0)

Remarks:

:

Note remarks

: MB 14,7 w 2 Test sheet : 28.03.91 Edition : 27.2.91 Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 898

Injection pump

Pump designation : PE8P120A320LS7838 EP type number : 0 412 628 848

Governor

Governor design. : RQ300/950PA971-4

Governer no.

: 0 421 801 558

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : 0M442 A

: 320.0 1st version kW : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35) Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

Spread

1st speed rpm: 600

Rack travel in mm : 13.80...14.00

Del.guantity cm3/: 22.3...22.5

100 s: (22.0...22.8)

cm3 : 0.6

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 6.2...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION

Control-lever position Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 900

: 223.0...225.0 Del.quantity

1000 : (220.0...228.0)

Spread cm3 : 6.00

1000 : (9.00)

RATED SPEED

1st version

Setting point:

Speed : 600 rpm

H03

Rack travel in mm: 20.0 Testina: 1st rack travel in: 13.50 Speed rpm : 990...1005 2nd rack travel in: 4.00 rpm : 1070...1100 Speed 4th rack travel in: 1150 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.5 Testina: Speed : 200 rpm Minimum rack trave: 7.80 rpm : 300 Rack travel in mm : 6.20...6.80 Rack travel in mm: 2.00 : 380...420 Speed L DUI TORQUE CONTROL Dimension a mm : 950 2nd speed rpm Rack travel in m: 14.50...14.70 3rd speed rpm : 800 Rack travel in m: 15.20...15.40 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm Pressure hPa : 900 Rack travel mm : 13.80...14.00 Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 9.80...10.00 2nd pressure hPa : 650 Rack travel in m: 12.80...13.00 3rd pressure hPa : 1100 Rack travel in m: 13.90...14.10 \* 4th pressure hPa : 1350 Rack travel in m: 14.80...15.00 5th pressure hPa : -Rack travel in m: 9.30...9.50 FUEL DELIVERY CHARACTERISTICS 1st version

Del.quantity cm3/: 234.0...237.0 1000 s: (231.0...240.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1600 Speed rpm : 800 Del.quantity cm3/ : 243.0...247.0 1000 s: (240.0...250.0) cm3 : 8.00 1000 s: (12.0) Spread Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 138.0...140.0 1000 s: (135.0...143.0) cm3 : 8.00Spread 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 13.50 Speed rpm : 990...1005 Remarks: \* Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

Aneroid pressure h: 1600

rpm : 950

#### Note remarks

: MB 14,7 w : 28.03.91 Test sheet Edition : 16.1.91 Replaces Test oil : ISO-4113

Combination no. : 0 402 648 906

Injection pump

Pump designation : PE8P120A320LS7838 EP type number : 0 412 628 848

Governor

Governor design. : RQ300/1050PA972-6 Governer no. : 0 421 801 569

Customer-spec, information

Customer : MERCEDES-BENZ

Engine : 0M442 A

1st version kW : 320.0 : 2100 Rated speed

# TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow |

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30 : (5.15...5.35) Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-4-1

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

#### BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.10...14.30

Del.quantity cm3/: 22.9...23.1

100 s: (22.6...23.4)

cm3 : 0.6Spread

100 s: (0.9)

rpm : 300.02nd speed

Rack travel in mm: 6.2...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.6Spread 100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm : 1020 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 1000

: 229.0...231.0 Del.quantity

1000 : (226.0...234.0)

cm3 : 6.00 Spread

1000 : (9.00)

## RATED SPEED

1st version

Setting point:

Speed : 1020 rom

Rack travel in mm: 20.0 Testina: 1st rack travel in: 13.50 Speed rpm : 1090...1105 2nd rack travel in: 4.00 rpm : 1165...1195 Speed 4th rack travel in: 1250 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.5 Testing: Speed rpm : 200 Minimum rack trave: 7.80 rpm : 300 Rack travel in mm : 6.20...6.80 CONSTANT REGULATION rpm : 300...500 Speed TORQUE CONTROL Dimension a mm : 1050 2nd speed rpm Rack travel in m: 14.50...14.70 3rd speed rpm : 800 Rack travel in m: 15.00...15.20 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 **CDM** hPa : 1000 Pressure Rack travel mm : 14.10...14.30 Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 10.00...10.20 2nd pressure hPa : 700 Rack travel in m: 13.00...13.20 3rd pressure hPa : 1200 Rack travel in m: 14.30...14.50 4th pressure hPa : 1350 Rack travel in m: 14.70...14.90 5th pressure hPa : -Rack travel in m: 9.20...9.40 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600

: 1050 Speed rpm Del.quantity cm3/: 226.0...229.0 1000 s: (223.0...232.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1600 Speed rpm : 800 Del.quantity cm3/: 239.0...243.0 1000 s: (236.0...246.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 138.0...140.0 1000 s: (135.0...143.0) Spread cm3 : 8.00 1000 s: (12.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 13.50

Speed rpm : 1090...1105

Remarks:

**H06** 

Note remarks

Test sheet : MB 14,7 w 1 Edition : 28.03.91 Replaces : 16.1.91 Test oil : ISO-4113

Combination no. : 0 402 648 908

Injection pump

Pump designation : PE8P120A320LS7838 EP type number : 0 412 628 848

Governor

Governor design. : RQV300...950PA797-23

: 0 421 813 910 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 A

1st version kW : 320.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter x Wall thickness

x Lenath mm : 8.GOX2.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm : (5.15...5.35)

Rack travel in mm : 20.00...21.00

: 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

Firing order

1st speed rpm: 600

Rack travel in mm : 13.80...14.00

Del.quantity cm3/: 22.3...22.5

100 s: (22.0...22.8)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 6.2...6.8

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3: 0.6

100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.00...1.50 travel mm

2nd speed : 617 LDW.

: 5.00...5.50 : 780 travel mm

3rd speed rpm

: 6.10...6.60 travel mm

: 1009 4th speed rpm

travel mm : 8.30...8.80

: 1092 5th speed rom

: 9.80...10.30 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 Speed rpm : 1020 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 600 Aneroid pressure h: 900 Del.quantity : 223.0...225.0 1000 : (220.0...228.0) cm3 : 6.00 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 120...128 Testing: 1st rack travel in: 13.50 rpm : 990...1000 Speed 2nd rack travel in: 4.00 rpm : 1080...1110 Speed 4th rack travel in: 1200 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 82...90 Testing: Speed rom Minimum rack trave: 7.80 : 300 rpm Rack travel in mm : 6.20...6.80 CONSTANT REGULATION rpm : 300...500 Speed TORQUE CONTROL Dimension a mm : 0.70 : 950 2nd speed rpm Rack travel in m: 14.50...14.70 rpm : 800 3rd speed Rack travel in m: 15.20...15.40 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm hPa : 900 Pressure : 13.80...14.00 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 9.80...10.00 2nd pressure hPa : 650 Rack travel in m: 12.80...13.00

Rack travel in m: 13.90...14.10 \* 4th pressure hPa : 1350 Rack travel in m: 14.80...15.00 5th pressure hPa : -Rack travel in m: 9.30...9.50 START CUT-OUT Speed 1/min: 240 (260) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1600 : 950 Speed rpm Del.quantity cm3/: 234.0...237.0 1000 s: (231.0...240.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1600 : 800 Speed rom Del.quantity cm3/: 243.0...247.0 1000 s: (240.0...250.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 138.0...140.0 1000 s: (135.0...143.0) Spread cm3 : 8.00 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.50 rpm : 990...1000 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 220.0...240.0 1000 s: (216.0...244.0) Remarks: \* Increase in control-rod travel with respect to setting at least 0.1 mm

3rd pressure hPa : 1100

Note remarks

: MB 14,7 u 2 : 22.03.91 : 27.2.91 Test sheet Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 648 909

Injection pump

Pump designation : PE8P120A320LS7840 EP type number : 0 412 628 850

Governor

Governor design. : RQ300/950PA971-6 Governer no. : 0 421 801 575

Customer-spec. information : MERCEDES-BENZ Customer

Engine : 0M442 A

1st version kW : 250.0 : 1900 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

**Overflow** 

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm

: 5.20...5.30 : (5.15...5.35)

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 13.40...13.60

Del.quantity cm3/: 20.7...20.9

100 s: (20.4...21.2)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.0 2nd speed Rack travel in mm: 6.0...6.6

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 600 Speed Aneroid pressure h: 800

Del.quantity

: 207.0...209.0

1000 : (204.0...212.0)

: 6.00 cm3 Spread

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 600 Speed rpm

Rack travel in mm : 20.0 Testina: 1st rack travel in: 12.10 rpm : 990...1005 Speed 2nd rack travel in: 4.00 Speed rpm : 1070...1100 4th rack travel in: 1150 rpm : 0.00...1.50Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm: 300 Rack travel in mm: 6.3 Testing: rpm : 200 Speed Minimum rack trave: 7.60 : 300 Speed rpm Rack travel in mm : 6.00...6.60 Rack travel in mm : 2.00 : 380...420 Speed rom TORQUE CONTROL Dimension a mm 2nd speed rpm : 950 Rack travel in m: 13.10...13.30 3rd speed rpm : 800 Rack travel in m: 14.10...14.30 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 man. hPa : 800 Pressure : 13.40...13.60 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 350 Rack travel in m: 11.20...11.40 2nd pressure hPa : 600 Rack travel in m: 12.80...13.00 3rd pressure hPa : 1050 Rack travel in m: 13.50...13.70 \* 4th pressure hPa : 1150 Rack travel in m: 13.90...14.20 5th pressure hPa : -Rack travel in m: 10.30...10.60 FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 205.0...208.0 1000 s: (202.0...211.0) Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: 1400 Speed rpm : 800 Del.quantity cm3/ : 236.0...240.0 1000 s: (233.0...243.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 123.0...125.0 1000 s: (120.0...128.0) cm3 : 8.00 Spread 1000 s: (12.0)

#### **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 12.10 Speed rpm : 990...1005

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

H10

Speed

1st version

Aneroid pressure h: 1400

rpm : 950

#### Note remarks

Test sheet : MB 14,7 v 3 Edition : 28.03.91

Replaces

Test oil : ISO-4113

Combination no. : 0 402 648 911

Injection pump

Pump designation: PE8P120A320LS7839 EP type number : 0 412 628 849

Governor

Governor design. : RQV300...1050PA797

-27

Governer no. : D 421 813 916

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M442 LA

1st version kW : 370.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening 1

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00...5.10 Prestroke mm : (4.95...5.15)

Rack travel in mm : 20.00...21.00

Firing order : 8- 7- 2- 6- 3- 5-

: 0-45-90-135-180-225-Phasing

270-315 Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.10...14.30

Del.quantity cm3/: 25.2...25.4

100 s: (24.9...25.7)

Spread cm3 : 0.6

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 5.2...5.8 Del.quantity cm3/ : 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

: 1.00...1.50 travel mm

: 558 2nd speed rpm

: 4.30...4.80 travel mm : 820 3rd speed rpm

travel mm : 5.90...6.40

4th speed : 1108 rpm

: 8.30...8.80 travel mm

5th speed : 1183 rpm

: 8.30...8.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1130

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP Rack travel in m: 13.20...13.40 3rd pressure hPa : 1200 Rack travel in m: 14.20...14.40 \*
4th pressure hPa : 1380
Rack travel in m: 15.10...15.30 1st version rpm : 600 Speed Aneroid pressure h: 1050 Del. quantity : 252.0...254.0 5th pressure hPa : -1000 : (249.0...257.0) Rack travel in m: 8.30...8.60 : 6.00 cm3 Spread 1000 : (9.00) START CUT-OUT RATED SPEED 1/min: 220 (240) Speed 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 118...126 1st version Testina: Aneroid pressure h: 1800 1st rack travel in: 14.10 Speed rpm : 1090...1100 rpm\_ : 1050 Del.quantity cm3/: 274.0...277.0 1000 s: (271.0...280.0) 2nd rack travel in: 4.00 : 1160...1190 cm3 : 8.00 Speed rom Spread 4th rack travel in: 1250 1000 s: (12.0) Speed rom : 0.00...1.00Aneroid pressure h: 1800 : 800 Speed rpm Del.quantity cm3/: 295.0...299.0 LOW IDLE 1 Control lever 1000 s: (292.0...302.0) position degrees: 76...84 Spread cm3 : 8.001000 s: (12.0) Testina: Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 139.0...141.0 Speed : 200 rom Minimum rack trave: 6.80 1000 s: (136.0...144.0) rpm : 300 Rack travel in mm : 5.20...5.80 Spread cm3 : 8.00 1000 s: (12.0) CONSTANT REGULATION rpm : 300...450 Speed BREAKAWAY TORQUE CONTROL : 0.80 Dimension a mm 1st version nd speed rpm : 1050 Rack travel in m: 15.10...15.30 2nd speed rpm 1mm rack travel less than 3rd speed rpm : 800 full load rack tr: 14.10 Rack travel in m: 15.90...16.10 rpm : 1090...1100 Speed Aneroid/Altitude STARTING FUEL DELIVERY Compensator Test Speed rpm Del.quantity cm3/: 275.0...295.0 1000 s: (271.0...299.0) 1st version Setting : 600 Speed rpm hPa : 1050 Pressure Remarks: Rack travel mm : 14.10...14.30 Measurement \* Increase in control-rod travel with 1/min: 600 Speed respect to setting at least 0.1 mm 1st pressure hPa : 290 Rack travel in m: 8.70...8.90

2nd pressure hpa : 780

Note remarks

: MB 12,8 o 3 Test sheet : 19.03.91 Edition

Replaces

Test oil : ISO-4113

: 0 402 648 914 Combination no.

Injection pump

Pump designation : PE8P120A320LS7835 EP type number : 0 412 628 847

Governor

: RQV300...1050PA797 Governor design.

-30

: 0 421 813 921 Governer no.

Customer—spec. information

Customer : MERCEDES-BENZ

: 0M402 A Engine

: 280.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values \_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 : (5.45...5.65) Prestroke mm

Rack travel in mm : 20.00...21.00

: 8- 7- 2- 6- 3- 5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.60...14.80

Del.quantity cm3/: 22.1...22.3

100 s: (21.8...22.6)

Spread cm3 : 0.6

100 s: (0.9)

rpm : 300.0 2nd speed

Rack travel in mm: 6.2...6.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.6100 s: (1.0)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 300 : 1.00...1.50 travel mm

: 558 2nd speed rpm

: 4.30...4.80 travel mm : 820 3rd speed

rpm travel mm : 5.90...6.40

: 1108 4th speed rpm

: 8.30...8.80 travel mm

: 1183 5th speed rpm

: 8.30...8.80 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1130

Rack travel in mm : 16.50...18.00

FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 600 Aneroid pressure h: 900 Del.quantity : 221.0...223.0 Del.quantity : 221.0...226.0) : 6.00 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 118...126 Testing: 1st rack travel in: 13.30 Speed riom : 1090...1100 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1250 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 82...90 Testing: Speed rom Minimum rack trave: 7.80 rpm : 300 Rack travel in mm : 6.20...6.80 CONSTANT REGULATION Speed rpm : 300...500 TORQUE CONTROL Dimension a mm : 0.60 2nd speed rpm : 1050 Rack travel in m: 14.30...14.50 3rd speed rpm : 800 Rack travel in m: 14.90...15.10 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm

hPa : 900 Pressure Rack travel mm : 14.60...14.80 Measurement 1/min: 600 Speed 1st pressure hPa : 250 Rack travel in m: 9.90...10.10

2nd pressure hPa : 600

Rack travel in m: 13.30...13.50 3rd pressure hPa : 1100 Rack travel in m: 14.70...14.80 \* 4th pressure hPa : -Rack travel in m: 9.00...9.30

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1500 Speed rpm : 1050

Del.quantity cm3/: 222.0...225.0 1000 s: (219.0...228.0)

Spread cm3 : 8.001000 s: (12.0)

Aneroid pressure h: 1500

Speed rpm : 800 Del.quantity cm3/: 234.0...238.0 1000 s: (231.0...241.0)

Spread cm3 : 8.001000 s: (12.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 122.0...124.0

1000 s: (119.0...127.0)

cm3 : 8.00 Spread 1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.30

rpm : 1090...1100 Speed

STARTING FUEL DELIVERY

Speed rpm\_ : 100

Del.quantity cm3/: 200.0...220.0 1000 s: (196.0...224.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

H14

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 12,8 o 4 : 19.03.91 Edition Replaces Test oil : ISO-4113 Combination no. : 0 402 648 915 Injection pump Pump designation : PE8P12OA320LS7835 EP type number : 0 412 628 847 Governor Governor design. : RQ300/1050PA993-1 Governer no. : 0 421 801 582

Customer-spec. information

Engine : 0M402 A

: 280.0 : 2100 1st version kW Rated speed

TEST BENCH REQUIREMENTS

Test oil

Customer

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

: MERCEDES-BENZ

Inlet press., bar: 1.50

**Overflow** 

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

: 1 680 750 067 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.50...5.60 : (5.45...5.65) Prestroke mm

Rack travel in mm : 20.00...21.00 Firing order : 8-7-2-6-3-5-4-1

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 14.60...14.80

Del.quantity cm3/: 22.1...22.3

100 s: (21.8...22.6)

cm3 : 0.6Spread

100 s: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 6.2...6.8

Del.quantity cm3/: 1.6...2.2 100 s: (1.3...2.5)

cm3 : 0.6Spread

100 s: (1.0)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 900

Del.quantity : 221.0...223.0 1000 : (218.0...226.0)

cm3 : 6.00

1000 : (9.00)

RATED SPEED

Spread

1st version

Setting point:

Speed : 600 rpm

Rack travel in mm : 20.0 Testina: 1st rack travel in: 13.40 Speed rpm : 1090...1105 2nd rack travel in: 4.00 rpm : 1170...1200 Speed 4th rack travel in: 1350 rpm : 0.00...1.50 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rom Rack travel in mm: 6.5 Testing: Speed : 200 rpm Minimum rack trave: 7.80 : 300 rpm Rack travel in mm : 6.20...6.80 Rack travel in mm : 2.00 Speed : 380...420 rom TORQUE CONTROL : 0.50 Dimension a mm : 950 2nd speed rpm Rack travel in m: 14.40...14.60 : 800 3rd speed rpm Rack travel in m: 14.90...15.10 Aneroid/Altitude Compensator Test 1st version Settina : 600 Speed man Pressure hPa : 900 : 14.60...14.80 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 250 Rack travel in m: 9.90...10.10 2nd pressure hPa : 600 Rack travel in m: 13.30...13.50 3rd pressure hPa : 1100 Rack travel in m: 14.70...14.80 \* 4th pressure hPa : -Rack travel in m: 9.10...9.40 FUEL DELIVERY CHARACTERISTICS

cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: 1500 : 800 Speed rpm Del.quantity cm3/: 234.0...238.0 1000 s: (231.0...241.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm Del.quantity cm3/: 122.0...124.0 1000 s: (119.0...127.0) cm3 : 8.00 Spread 1000 s: (12.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 13.30 Speed rpm : 1090...1105

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 210.0...230.0 1000 s: (206.0...234.0)

Remarks:

\* Increase in control-rod travel with respect to setting at least 0.1 mm

Speed

1st version

Aneroid pressure h: 1500

rpm : 1050

Del.quantity cm3/: 222.0...225.0 1000 s: (219.0...228.0)

Note remarks

Test sheet : MAN 14,5 e1 Edition : 28.03.91

Replaces

Test oil : ISO-4113

: 0 402 648 916 Combination no.

Injection pump

Pump designation : PE8P120A520LS7818-1

EP type number : 0 412 628 857

Governor

Governor design. : RQV250...1150PA902

: 0 421 813 720 Governer no.

Customer-spec. information Customer : MAN

: D2848LXE 40 Engine

: 500.0 1st version kW Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.50...4.60 : (4.45...4.65) Prestroke mm

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 14.10...14.20

Del.quantity cm3/: 30.7...30.9

100 s: (30.4...31.2)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 500 2nd speed

Rack travel in mm: 8.90...9.10 Del.quantity cm3/: 14.9...15.1

100 s: (14.6...15.4)

rpm : 250 3rd speed

Rack travel in mm : 7.30...7.50 Del.quantity cm3/ : 5.2...6.0 \*

100 s: (-)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 250 1st speed

: 1.40...1.60 travel mm

: 450 2nd speed rpm

: 3.40...4.00 travel mm

3rd speed : 850 man

travel mm : 6.30...6.90

4th speed rpm : 1150

travel mm : 9.40...9.60

: 1/50 5th speed rpm

: 13.00...14.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1210

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed rpm : 1150 1st version Aneroid pressure h: 1300 Aneroid pressure h: -Del.quantity : 307.0...312.0) Speed rpm : 500 Del.quantity cm3/ : 149.0...151.0 1000 s: (146.0...154.0) cm3 : 5.00 1000 : (9.00) Spread RATED SPEED BREAKAWAY 1st version 1st version Control lever 1mm rack travel less than position degrees: 118...126 full load rack tr: 13.10 Testing: Speed rpm : 1190...1200 1st rack travel in: 13.10 Speed rpm : 1190...1200 STARTING FUEL DELIVERY 2nd rack travel in: 4.00 Speed rpm : 1285...1315 4th rack travel in: 1450 Speed rpm : 0.00...1.00 Speed rpm : 100 Del.quantity cm3/ : 100.0...12.0 \* 1000 s: (-) LOW IDLE 1 Control lever Speed rpm : 100 Del.quantity cm3/: 0 \*\* position degrees: 80...88 1000 s: (-) Testing: Speed rpm : 100 HIGH IDLE Minimum rack trave: 8.90 Speed rpm : 250 Rack travel in mm : 7.30...7.50 1st version Speed rpm : 500 Rack travel in mm : < 7.00 Rack travel in mm : 2.00 rpm : 430...490 Del.quantity cm3/: 0 \*\* 1000 s: (-) Speed Aneroid/Altitude Compensator Test 2nd version Speed rpm : 500 Rack travel in mm: < 7.50 Del.quantity cm3/: < 50.0 \*\* 1000 s: (-) 1st version Setting rpm : 500 Speed hPa : 1300 Pressure 3rd version Speed rpm : 500 Rack travel in mm : 8.30...8.50 Rack travel mm : 14.10...14.20 Del.quantity cm3/: 125.0... \*\* 1000 s: (-) Measurement 1/min: 500 Speed 1st pressure hPa : -LOW IDLE Rack travel in m: 8.90...9.10 Speed rpm : 250
Rack travel in mm : 7.30...7.50
Del.quantity cm3/ : 52.0...60.0 \* 2nd pressure hPa : 100 Rack travel in m: 9.30...9.40
3rd pressure hPa : 470 Rack travel in m: 11.90...12.20 1000 s: (-) START CUT-OUT Remarks: 1/min: 200 (220) Speed \* applies to cylinders 2, 3, 4 and 8 \*\* applies for cylinders 1, 5, 6, and 7 FUEL DELIVERY CHARACTERISTICS

# APPLICATION Ship

## Note remarks

: MB 14,7 g 3 : 19.03.91 Test sheet Edition Replaces : 8.6.88 Test oil : ISO-4113

Combination no. : 0 402 678 808

Injection pump

Pump designation : PE8P120A320LS7801-2 EP type number : 0 412 628 825

Governor

Governor design. : RSV350...1050P0A535

Governer no. : 0 421 833 281

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : CM442LA

: 320.0 : 2100 1st version kW Rated speed

# TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Openina

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00X2.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (4.15...5.35) Prestroke mm

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

rpm: 600 1st speed

Rack travel in mm : 14.50...14.60

Del.quantity cm3/: 21.6...21.9

100 s: (21.3...22.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0 Rack travel in mm : 5.6...5.8 Del.quantity cm3/ : 1.5...2.1

100 s: (1.2...2.4)

cm3 : 0.8 Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 600 Aneroid pressure h: 750

Del.quantity : 210.0...222.0)

: 5.00 cm3

1000 : (9.00)

RATED SPEED

1st version

H20

Control Lever position degrees: 86...94 Testina: 1st rack travel in: 14.00 rom : 1070...1080 Speed 2nd rack travel in: 4.00 Speed rpm : 1130...1160 4th rack travel in: 1400 Speed rpm : 0.30...1.40 LOW IDLE 1 Control Lever position degrees: 63...71 Setting point w/out bumper spring Speed rpm Rack travel in mm: 5.7 Testina: Speed rpm : 100Minimum rack trave: 19.50 : 350 Speed rpm Rack travel in mm : 5.60...5.80 Rack travel in mm: 2.00 : 360...420 Speed rom SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1030 Rack travel in m: 15.00...15.20 2nd speed rpm : 850 Rack travel in m: 15.70...15.90 3rd speed rpm : 923 Rack travel in m: 15.40...15.60 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 600 Pressure hPa : 750 Rack travel mm : 14.50...14.60 Measurement 1/min: 600 Speed 1st pressure hPa : 400 Rack travel in m: 12.20...12.40 2nd pressure hPa : 550 Rack travel in m: 13.70...13.90 3rd pressure hPa : 950

Rack travel in m: 14.90...15.10

Rack travel in m: 15.30...15.50

4th pressure hPa : 1050

5th pressure hPa : -

Rack travel in m: 11.20...11.50 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1250 : 1030 Speed rpm Del.quantity cm3/: 222.0...225.0 1000 s: (219.0...228.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1250 rpm : 850 Specu Del.quantity cm3/: 234.0...238.0 1000 s: (231.0...241.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 143.0...145.0 1000 s: (140.0...148.0) Spread cm3 : 8.00 1000 s: (-) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 14.00 rum : 1070...1080 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 240.0...260.0 1000 s: (236.0...264.0) Remarks: Observe VDT-I-420/120

#### Note remarks

Test sheet : MB 14,7 a 5 : 19.03.91 Edition Replaces : 21.4.89 Test oil : ISO-4113

Combination no. : 0 402 678 810

Injection pump

Pump designation : PE8P12OA320LS7801-2 EP type number : 0 412 628 825

Governor

Governor design. : RSV450...1050P0A541

: 0 421 833 303 Governer no.

Customer-spec. information

Customer : DAIMLER-BENZ

Engine : 0M442A

1st version kW : 260.0 Rated speed : 2100

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00x2.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (4.15...5.35) Rack travel in mm : 9.00...12.00

: 8-7-2-6-3-5-Firing order

Phasing : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

BASIC SETTING

1st speed rpm : 1030

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 17.8...18.0

100 s: (17.5...18.3)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 450.02nd speed Rack travel in mm : 4.9...5.2

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed rpm : 1030 Aneroid pressure h: 1100

Del.quantity : 170.0...183.0)

cm3 : 5.00 1000 : (9.00)

RATED SPEED

1st version

Control Lever

position degrees: 88...96

Testina:

1st rack travel in: 11.70

rpm : 1060...1070 Speed

2nd rack travel in: 4.00

Speed rpm : 1110...1130

4th rack travel in: 1400

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control Lever

position degrees: 67...75

Setting point w/out bumper spring

: 450 rom Rack travel in mm: 5.0

Testing:

Speed rom : 100 Minimum rack trave: 19.50 rpm : 450 Speed

Rack travel in mm : 4.90...5.20 Rack travel in mm : 2.00

: 460...520 Speed rom

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1030 Rack travel in m: 12.70...12.80

2nd speed rpm : 950

Rack travel in m: 13.10...13.30

3rd speed rpm : 800

Rack travel in m: 13.80...14.00

4th speed rpm : 700

Rack travel in m: 14.30...14.50

Aneroid/Altitude

Compensator Test

1st version Setting

rpm : 500 Speed

hPa : -Pressure

: 11.00...11.30 Rack travel mm

Measurement

1/min: 500 Speed

1st pressure hPa : 420

Rack travel in m: 11.70...11.90

2nd pressure hPa : 600

Rack travel in m: 13.40...13.60

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1100 rpm : 700 Speed

Del.quantity cm3/: 208.0...212.0 1000 s: (205.0...215.0)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 138.0...140.0 1000 s: (135.0...143.0)

cm3 : 8.00Spread

1000 s: (12.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.70

Speed rpm : 1060...1070

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 180.0...200.0 1000 s: (176.0...204.0)

•

Remarks:

H23

## Note remarks

: MB 14,7 g 6 : 19.03.91 Test sheet Edition : 20.10.89 Replaces Test oil : ISO-4113

Combination no. : 0 402 678 812

Injection pump

Pump designation : PE8P120A320LS7801-2

: 0 412 628 825 EP type number

Governor

Governor design. : RSV350...1050P0A535-

: 0 421 833 318 Governer no.

Customer—spec. information

Customer : MERCEDES-BENZ

Engine : 0M442A

1st version kW : 260.C : 2100 Rated speed

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test Lines : 1 680 750 075

Outside diameter

x Wall thickness

x Length mm : 8.00X2.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (4.15...5.35)

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-4-1

: 0-45-90-135-180-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SETTING

1st speed rpm: 1030

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 17.9...18.1

100 s: (17.6...18.4)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.0 2nd speed Rack travel in mm: 5.4...6.0

Del.quantity cm3/: 1.5...2.1 100 s: (1.2...2.4)

cm3 : 0.8 100 s: (1.2) Spread

GUIDE SLEEVE POSITION Control-lever position

> Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1030 Speed Aneroid pressure h: 1100

179.0...181.0 1000 : (176.0...184.0) cm3 : 5.00 Del.quantity

Spread

1000 : (9.00)

#### RATED SPEED

1st version Control lever

position degrees: 86...94

Testina: 1st rack travel in: 11.80 Speed rpm : 1070...1080 2nd rack travel in: 4.00 rpm : 1130...1160 Speed 4th rack travel in: 1400 Speed rpm : 0.30...1.40 LOW IDLE 1 Control lever position degrees: 63...71 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 5.7 Testing: Speed rom : 100 Minimum rack trave: 19.50 rpm : 350 Rack travel in mm : 5.40...6.00 Rack travel in mm : 2.00 Speed rpm : 410...480 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1030 Rack travel in m: 12.80...12.90 rpm : 950 2nd speed Rack travel in m: 13.10...13.30 3rd speed rpm : 830 Rack travel in m: 13.80...14.00 4th speed rpm : 700 Rack travel in m: 14.40...14.60 Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 Speed hPa : -Pressure : 11.20...11.50 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 420 Rack travel in m: 11.90...12.10 2nd pressure hPa : 600 Rack travel in m: 13.50...13.70 FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 1100
Speed rpm: 700
Del.quantity cm3/: 210.0...214.0
1000 s: (207.0...217.0)
Spread cm3: 8.00
1000 s: (12.0)
Aneroid pressure h: Speed rpm: 500
Del.quantity cm3/: 139.0...141.0
1000 s: (136.0...144.0)
Spread cm3: 8.00
1000 s: (12.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.80 Speed rpm : 1070...1080

STARTING FUEL DELIVERY

Speed rpm : 100 Del. quantity cm3/ : 180.0...200.0 1000 s: (176.0...204.0)

Remarks:

H25

1st version

#### Note remarks

: MB 14,7 g 7 Test sheet : 19.03.91 Edition : 1.3.91 Replaces Test oil : ISO-4113

Combination no. : 0 402 678 814

Injection pump

Pump designation : PE8P120A320LS7801-1 EP type number : 0 412 628 818

Governor

Governor design. : RSV350...1050POA535

: 0 421 833 352 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0%442LA Engine

: 260.0 1st version kW : 2100 Rated speed

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

**Opening** 

pressure, bar : 207...210

Orifice plate

: 0,8 diameter mm

: 1 680 750 067 Test lines

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 Prestroke mm

: (4.15...5.35)

Rack travel in mm : 9.00...12.00 : 8-7-2-6-3-5-Firing order

: 0-45-90-135-180-225-Phasing

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 8

#### BASIC SETTING

1st speed rpm: 500

Rack travel in mm : 13.90...14.10

Del.quantity cm3/: 20.1...20.3

100 s: (19.8...20.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 350.02nd speed Rack travel in mm: 5.6...5.8 Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

cm3 : 0.8 Spread 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 500 Speed

Aneroid pressure h: 700

: 201.0...203.0 Del.quantity 1000 : (198.0...206.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control lever position degrees: 86...94 Testing: 1st rack travel in: 12.00 Speed rpm : 1070...1080 2nd rack travel in: 4.00 Speed rpm : 11140...1158 4th rack travel in: 1400 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 63...71 Setting point w/out bumper spring rom : 350 Rack travel in mm: 5.7 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 350
Rack travel in mm : 5.60...5.80
Rack travel in mm : 2.00 rpm : 360...420 Speed SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1030 Rack travel in m: 15.00...13.20 2nd speed rpm : 700 Rack travel in m: 14.40...14.60 3rd speed rpm : 900 Rack travel in m: 13.50...13.70 Aneroid/Altitude Compensator Test 1st version Setting rom : 600 Speed hPa : 700 Pressure : 13.90...14.10 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : 400

Rack travel in m: 12.30...12.50

Rack travel in m: 13.20...13.40

Rack travel in m: 14.10...14.20

Rack travel in m: 11.80...12.00

2nd pressure hPa : 500

3rd pressure hPa : 925

4th pressure hPa : -

FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1100 rpm : 1030 Speed Del.quantity cm3/: 181.0...184.0 1000 s: (178.0...187.0) cm3 : 8.00 1000 s: (12.0) Spread Aneroid pressure h: 1100 Speed rpm: 700 Del.quantity cm3/: 213.0...217.0 1000 s: (210.0...220.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 143.0...145.0 1000 s: (140.0...148.0) cm3 : 8.00 Spread 1000 s: (-) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 12.00 Speed rpm : 1070...1080 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 180.0...200.0 1000 s: (176.0...204.0) Remarks:

#### Note remarks

: MB 14,7 g 8 Test sheet : 19.03.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 402 678 815

Injection pump

Pump designation : PE8P120A320LS7801-1 : 0 412 628 818

EP type number Governor

Governor design. : RSV350...1050P0A535

Governer no. : 0 421 833 357

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM442A

: 245.0 1st version kW Rated speed : 2100

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C . 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 105 assembly

Opening

pressure, bar : 207...210

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 075

Outside diameter x Wall thickness

x Length mm : 8.00X2.50X1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (4.15...5.35)

Rack travel in mm : 9.00...12.00 Firing order : 8-7-2-6-3-5-4-1

Phasina : 0-45-90-135-180-225-

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 8

## BASIC SEITING

1st speed rpm: 1180

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 17.0...17.2

100 s: (16.7...17.5)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 650.0 Rack travel in mm: 4.0...4.6

Del.quantity cm3/: 1.6...2.2

100 s: (1.3...2.5)

Spread cm3 : 0.8

100 s: (1.2)

## GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1180 Speed

: 170.0...172.0 Del.quantity

1000 : (167.0...175.0)

cm3 : 5.00 1000 : (9.00) Spread

RATED SPEED

1st version

Control lever

position degrees: 86...94

Testina:

1st rack travel in: 11.00

Speed rpm : 1215...1225 2nd rack travel in: 4.00

Speed rpm: 1249...1267 4th rack travel in: 1500

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control Lever

position degrees: 71...79 Setting point w/out bumper spring

Speed rpm : 650 Rack travel in mm: 4.3

Testing:

Speed : 100 rpm Minimum rack trave: 19.50

rpm : 650 Speed

Rack travel in mm : 4.00...4.60

Rack travel in mm: 2.00

rpm : 660...720

SET IDLE AUXILIARY SPRING

Rack travel in mm : 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1180

Rack travel in m: 12.20...12.30

2nd speed rpm : 1000

Rack travel in m: 12.40...12.60

3rd speed rpm : 900

Rack travel in m: 12.80...13.00

4th speed rpm : 600

Rack travel in m: 13.20...13.40

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 900 Speed

Del.quantity cm3/: 184.0...187.0

1000 s: (181.0...190.0)

Spread cm3 : 8.00

1000 s: (12.0)

Speed rpm : 600 Del.quantity cm3/ : 195.0...199.0 1000 s: (192.0...202.0)

Spread cm3 : 8.00

1000 s: (12.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.00

rpm : 1215...1225 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 170.0...190.0

1000 s: (166.0...194.0)

Remarks:

:

#### Note remarks

: CUM 5,9 w 2 Test sheet Edition : 19.03.91 Replaces : 18.2.91 Test oil : ISO-4113

Combination no. : 0 402 736 811

Injection pump

Pump designation : PES6P110A120RS7213 EP type number : 0 412 716 804

Governor

: RQV400...1250PA964-3 Governor design.

: 0 421 815 255 Governer no.

Customer-spec. information : C.D.C. Customer

Engine : 6BTA-A

1st version kW : 147.0 Rated speed : 2500

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 115...125

Test nozzle holder

assembly : 1 688 901 101

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

: 1 680 750 008 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 4.35...4.45 : (4.30...4.50)

Rack travel in mm: 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

## BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 14.80...14.90

Del.quantity cm3/: 15.8...16.0

100 s: (15.5...16.3)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 400.0 2nd speed

Rack travel in mm : 5.5...5.7 Del.quantity cm3/ : 3.2...3.8

100 s: (3.0...4.0)

cm3 : 0.8Spread 100 s: (1.2)

(B) Setting of injection pump with governor

#### GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 0.70...1.10 travel mm

: 400 2nd speed rpm

travel mm : 1.40...1.60

3rd speed rpm : 600

: 2.90...3.30 travel mm

: 1300 4th speed rpm

travel mm : 7.20...7.40

5th speed 1500 rpm

travel mm : 9.10...9.50

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1250 Aneroid pressure h: 1200

Del.quantity : 130.3...163.5)

Spread cm3 : 5.001000 : (9.00)

RATED SPEED

1st version Control lever

position degrees: 56...64

Testing:

1st rack travel in: 13.80 rpm : 1290...1320 Speed

2nd rack travel in: 4.00 Speed rpm: 1475...1485 4th rack travel in: 1600

rpm : 0.00...1.00 Speed

LOW IDLE 1 Control Lever

position degrees: 12...20

Testing:

Speed rpm : 275 Minimum rack trave: 7.20 rpm : 400

Rack travel in mm : 5.50...5.70

CONSTANT REGULATION

rpm : 325...520 Speed

TORQUE CONTROL

Dimension a mm : 1.60

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 14.80...14.90 2nd speed rpm : 800

Rack travel in m: 13.20...13.40

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 1250 Speed Pressure hPa : 1200

Rack travel mm : 14.80...14.90

Measurement

1/min: 1250 Speed

1st pressure hPa : -

Rack travel in m: 8.20...8.60

2nd pressure hPa : 410

Rack travel in m: 10.00...10.10

3rd pressure hPa : 755

Rack travel in m: 13.20...13.60

START CUT-OUT

1/min: 290 (300) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1200

Speed rpm : 800 Del.quantity cm3/ : 156.5...162.5 1000 s: (153.5...165.5)

Spread cm3 : 8.00

1000 s: (12.0)

Aneroid pressure h: rpm\_ : 500 Speed

Del.quantity cm3/: 90.0...94.0

1000 s: (88.0...96.0)

BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 13.80

rpm : 1290...1320 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 140.0...160.0 1000 s: (135.0...165.0)

Rack travel in mm : 11.90...12.90

LOW IDLE

rpm : 400 Speed

Rack travel in mm : 5.50...5.70 Del.quantity cm3/: 32.0...38.0

1000 s: (30.0...40.0)

Spread cm3 : 8.001000 s: (12.00)

Remarks:

: C.D.C # 3918321

Start-of-delivery mark = 5.5° after

start of delivery cyl. 1.

Note remarks

: MB 11,7 h : 22.03.91 : 2.9.88 Test sheet Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 746 845

Injection pump

Pump designation : PES6P120A720LS7107 : 0 412 726 801

EP type number

Governor

Governor design. : R0300/1100PA903 : 0 421 801 455 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M447ha Engine

1st version kW : 206.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.20...5.30

: (5.15...5.35) Rack travel in mm : 9.00...12.00

Firing order : 6-2-4-1-5-3

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 13.40...13.50

Del.quantity cm3/: 19.7...19.9

100 s: (19.4...20.2)

Spread cm3 : 0.5

100 s: (0.9)

rpm : 300.02nd speed Rack travel in mm: 5.8...6.2 Del.quantity cm3/: 1.4...2.0 100 s: (1.1...2.3)

Spread cm3 : 0.8 100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 650

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 750

: 197.0...199.0 Del.guantity 1000 : (194.0...202.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Setting point:

: 650 Speed Rack travel in mm: 20.0 Testing:

1st rack travel in: 12.40

rpm : 1145...1160 Speed

2nd rack travel in: 4.00

Speed rpm : 1220...1250
4th rack travel in: 1350
Speed rpm : 0.00...1.50

LOW IDLE 1

Setting point w/out bumper spring

rom Rack travel in mm: 5.9

Testing:

Speed rpm : 100 Minimum rack trave: 7.50

Speed rpm : 300 Rack travel in mm : 5.80...6.00 Rack travel in mm : 2.00

: 380...420 Speed rpm

Aneroid/Altitude Compensator Test

1st version

Setting

Speed rom : 500

Pressure hPa : -

: 11.20...11.50 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : 230

Rack travel in m: 11.50...11.60

2nd pressure hPa : 370

Rack travel in m: 12.90...13.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 750

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 149.0...151.0

1000 s: (146.0...154.0)

Spread cm3 : 8.00

1000 s: (12.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 12.40

rpm : 1145...1160 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 150.0...170.0 1000 s: (146.0...174.0)

Remarks:

Adjust full-load delivery by turning temperature-dependent excess-fuel stop

for starting (TAS).

**APPLICATION** 

**Omnibus** 

**J05** 

#### Note remarks

: MB 11,8 s 1 : 22.03.91 Test sheet Edition

Replaces

Test oil : ISO-4113

: 0 402 746 906 Combination no.

Injection pump

Pump designation : PES6P120A720LS7196

: 0 412 726 831 EP type number

Governor

Governor design. : RQV450...1050PA886-1

: 0 421 813 835 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : 0M447 h LA

: 304.0 : 2100 1st version kW Rated speed

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Opening |

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00X1.50X1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 5.00...5.10 : (4.95...5.15)

Rack travel in mm : 19.00...21.00

Firing order

: 6-2-4-1-5-3

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

#### BASIC SETTING

1st speed rpm: 600

Rack travel in mm : 15.20...15.40

Del.quantity cm3/: 28.4...28.6

100 s: (28.1...28.9)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 450.0

Rack travel in mm : 4.0...4.6 Del.quantity cm3/ : 1.0...1.6

100 s: (0.7...1.9)

cm3 : 0.8

Spread 100 s: (1.2)

## (B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 450 1st speed

: 1.10...1.60 travel mm

2nd speed rpm : 650

: 3.50...4.00 travel mm

rpm : 940 3rd speed

: 5.50...6.00 travel mm

rpm : 1107 4th speed

: 7.30...7.80 travel mm

5th speed : 1226 rpm

: 9.80...10.30 travel mm

# GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1150

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Rack travel in m: 13.70...13.90 rpm : 600 Speed 3rd pressure hPa : 1200 Aneroid pressure h: 950 Rack travel in m: 15.50...15.70 Del.quantity : 284.0...289.0) 4th pressure hPa : -Rack travel in m: 9.80...10.20 cm3 : 5.00 1000 : (9.00) START CUT-OUT RATED SPEED 1/min: 370 (390) Speed 1st version FUEL DELIVERY CHARACTERISTICS Control lever position degrees: 113...121 1st version Testina: Aneroid pressure h: 1600 1st rack travel in: 14.40 Speed rpm : 1050 Del.quantity cm3/: 280.0...283.0 1000 s: (277.0...286.0) rpm : 1090...1100 Speed 2nd rack travel in: 4.00 Speed rpm : 1180...1210 4th rack travel in: 1300 cm3 : 8.00 Spread 1000 s: (12.0) rpm : 0.00...1.00Aneroid pressure h: 1600 Speed rpm : 800 Speed Del.quantity cm3/: 298.0...302.0 LOW IDLE 1 1000 s: (295.0...305.0) Control lever position degrees: 61...69 cm3 : 8.00Spread 1000 s: (12.0) Testing: Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 145.0...147.0 1000 s: (142.0...150.0) Speed rpm : 300 Minimum rack trave: 5.90 Speed rpm: 450 Rack travel in mm: 4.00...4.60 cm3 : 8.00 Spread 1000 s: (12.0) CONSTANT REGULATION Speed rpm : 450...650 **BREAKAWAY** TORQUE CONTROL Dimension a mm : 0.60 1st version 1mm rack travel less than 2nd speed rpm : 1050 Rack travel in m: 15.40...15.60 3rd speed rpm : 900 full load rack tr: 14.40 Rack travel in m: 15.70...15.90 4th speed rpm : 800 rpm : 1090...1100 Speed Rack travel in m: 16.00...16.20 STARTING FUEL DELIVERY Aneroid/Altitude Compensator Test : 100 Speed rpm Del.quantity cm3/: 280.0...300.0 1000 s: (276.0...304.0) 1st version Settina Remarks: : 600 Speed rpm hPa : 950 Pressure Rack travel mm : 15.20...15.40 Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 11.80...12.00 2nd pressure hPa : 600

#### Note remarks

: MAC 16,0 a Test sheet : 19.03.91 Edition Replaces : 16.3.90 Test oil : ISO-4113

: 0 402 748 802 Combination no.

Injection pump

Pump designation : PES8P120A920/4LS7159

EP type number

: 0 412 728 801

Governor Governor design.

: RQV325...1050PA848-

21K

: 0 421 815 201 Governer no.

Customer-spec. information Customer : MACK

: EE9 502 Engine

: 368.0 1st version kW : 2100 Rated speed

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 011

Overflow

quantity min. 1/h: 160...170

Test nozzle holder

assembly : 1 688 901 101

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

#### BEGINNING OF DELIVERY

Test pressure, bar: 22...24

Prestroke mm : 3.55...3.65 : (3.50...3.70) Rack travel in mm : 9.00...12.00 Firing order : 1- 2- 7- 8- 4- 5-6- 3

: 0-45-90-135-186-225-Phasing

270-315

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

#### BASIC SETTING

1st speed rpm: 630

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 21.1...21.3

100 s: (20.8...21.6)

cm3 : 0.5Spread

100 s: (0.9)

rpm : 325.0 2nd speed Rack travel in mm: 4.8...5.0 Del.quantity cm3/: 4.0...4.6

100 s: (3.8...4.8)

cm3 : 0.8 Spread 100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 325

: 1.30...1.60 travel mm

rpm : 450 2nd speed

: 2.30...2.70 travel mm rpm : 800 3rd speed

: 4.40...4.80 travel mm

: 1050 4th speed rpm

: 6.90...7.10 travel mm

5th speed rpm : 1200

travel mm : 8.90...9.20

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1220 Speed

Rack travel in mm : 7.00...13.00

FULL LOAD DELIV. AT FULL LOAD STOP

2nd pressure hPa : 195 Rack travel in m: 10.20...10.30 1st version rpm : 630 Speed Aneroid pressure h: 1200 3rd pressure hPa : 410 Del.quantity : 211.0...216.0) Rack travel in m: 12.10...12.50 : 5.00 START CUT-OUT 1000 : (9.00) 1/min: 280 (290) Speed RATED SPEED FUEL DELIVERY CHARACTERISTICS 1st version Control lever position degrees: 57...65 1st version Aneroid pressure h: 1200 rpm\_ : 1050 Testing: Speed 1st rack travel in: 12.30 Del.quantity cm3/: 204.0...210.0 rpm : 1095...1105 1000 s: (201.0...213.0) Speed 2nd rack travel in: 4.00 Spread cm3 : 10.00rpm : 1190...1220 1000 s: (14.0) Speed 4th rack travel in: 1300 Speed : 850 riom Del.quantity cm3/: 159.0...161.0 \* 1000 s: (151.0...173.5) rpm : 0.00...1.00Speed LOW IDLE 1 Aneroid pressure h: -Speed rpm : 400 Del.quantity cm3/: 170.5...174.5 1000 s: (168.5...176.5) Control lever position degrees: 9...17 Testing: Speed rpm Minimum rack trave: 1.50 **BREAKAWAY** : 325 Speed rpm Rack travel in mm : 4.80...5.00 1st version 1mm rack travel less than CONSTANT REGULATION rpm : 325...600 Speed full load rack tr: 12.30 rpm : 1095...1105 Speed TORQUE CONTROL Dimension a mm :? STARTING FUEL DELIVERY Torque control curve - 1st version 1st speed rpm : 630 Rack travel in m: 12.10...12.30 rpm : 100 Speed Del.quantity cm3/: 150.0...190.0 1000 s: (145.0...195.0) 2nd speed rpm : 1050 Rack travel in m: 13.30...13.50 rpm : 500 3rd speed Rack travel in mm : 9.50...9.90 Rack travel in m: 0.00...11.30 LOW IDLE Aneroid/Altitude Compensator Test rpm Rack travel in mm : 4.80...5.00 Del.quantity cm3/: 40.0...46.0 1st version 1000 s: (38.0...48.0) Setting cm3 : 8.00Spread Speed : 1050 1000 s: (12.00) man Pressure hPa : 1200 Rack travel mm : 13.30...13.50 Remarks: : MACK # 313GC5178P4 Measurement Speed 1/min: 1050 Setting and blocking of pointer of start-of-delivery sensor on cyl. 1 1st pressure hPa : Rack travel in m: 9.10...9.50 start of delivery

Bow dimension:
Sliding—sleeve position = 37.0 mm
\* This test specification applies only
to the engine/nozzle-and—holder
assemblies on an injection—pump test
bench: setting for test equipment,
check value for engine equipment.

#### Note remarks

: MB 11,7 c 3 : 22.03.91 : 18.2.91 Test sheet Edition Replaces Test oil : ISO-4113

Combination no. : 0 402 776 806

Injection pump

Pump designation : PES6P120A720LS7120 EP type number : 0 412 726 803

Governor

Governor design. : RSV350...1050P0A529-

: 0 421 833 317 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

: 0M447 A Engine

1st version kW : 213.0 : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Overflow

quantity min. 1/h: 100...120

Test nozzle holder

: 1 688 901 019 assembly

Openina

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.20...5.30 : (5.15...5.35) Prestroke mm

Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 650

Rack travel in mm : 14.00...14.20

Del.quantity cm3/: 20.2...20.4

100 s: (19.9...20.7)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 350.0Rack travel in mm: 5.6...5.8

Del.quantity cm3/: 1.4...2.0

100 s: (1.1...2.3) cm3 : 0.8Spread

100 s: (1.2)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 650 Speed Aneroid pressure h: 650

: 202.0...204.0 Del.quantity

1000 : (199.0...207.0)

: 5.00 Spread cm3

1000 : (9.00)

RATED SPEED

1st version

Control Lever position degrees: 41...49 Testing: 1st rack travel in: 12.30 rpm : 1080...1085 Speed 2nd rack travel in: 4.00 rpm : 1160...1173 Speed 4th rack travel in: 1300 Speed rpm : 0.30...1.40 LOW IDLE 1 Control Lever position degrees: 18...26 Setting point w/out bumper spring : 350 rom Rack travel in mm: 5.7 Speed : 350 rom Rack travel in mm : 5.60...5.80 SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00 TORQUE CONTROL Torque control curve - 1st version rpm : 1030 1st speed Rack travel in m: 13.30...13.50 rom : 950 2nd speed Rack travel in m: 13.70...13.90 3rd speed rom : 875 Rack travel in m: 14.20...14.40 4th speed rpm : 750 Rack travel in m: 14.70...14.90 Aneroid/Altitude Compensator Test 1st version Setting Speed : 600 rpm Pressure hPa : 650 Rack travel mm : 14.00...14.20 Measurement 1/min: 600 Speed 1st pressure hPa : 300 Rack travel in m: 12.30...12.50 2nd pressure hPa : 850 Rack travel in m: 15.00...15.20 3rd pressure hPa : -Rack travel in m: 11.30...11.60

FUEL DELIVERY CHARACTERISTICS

rpm : 1030

Aneroid pressure h: 1200

Del.quantity cm3/: 194.0...197.0 1000 s: (191.0...200.0) cm3 : 8.00Spread 1000 s: (12.0) Aneroid pressure h: 1200 : 750 Speed rpm Del.quantity cm3/: 219.0...224.0 1000 s: (216.0...227.0) cm3 : 8.00 Spread 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 144.0...146.0 1000 s: (141.0...149.0) cm3 : 8.00 Spread 1000 s: (12.0)

#### **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 12.30 Speed rpm : 1080...1085

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 190.0...210.0 1000 s: (186.0...214.0)

Remarks:

:

Speed

1st version

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.15...3.25 : (3.10...3.30) Note remarks Rack travel in mm : 9.00...12.00 : 1-5- 3- 6- 2- 4 Firing order Test sheet : CUM 8,3 D12 Edition : 22.03.91 : 23.04.90 Replaces Test oil : ISO-4113 : 0-60-120-180-240-300 Phasing : 0 403 436 111 : 0.50 (0.75) Combination no. Tolerance + - ° Injection pump Time to cyl. no. : 1 Pump designation : PES6MW100/120RS1143 : 0 413 406 137 EP type number BASIC SETTING Governor Governor design: : RQV350...1200MW82-6 1st speed rpm: 1200 : 0 420 083 184 Governer no. Rack travel in mm: 12.30...12.40 Customer-spec. information : CUMMINS/US Del.quantity cm3/: 14.0...14.2 Customer : 6 CTA-830 100 s: (13.8...14.4) Engine 1st version kW : 186.0 cm3 : 0.3Spread : 2400 Rated speed 100 s: (0.6) TEST BENCH REQUIREMENTS rpm : 350.0 2nd speed Rack travel in mm : 7.1...7.3 Del.quantity cm3/: 1.2...1.6 100 s: (1.0...1.8) Test oil inlet temp. °C : 38...42 cm3 : 0.3 Overflow valve Spread : 1 417 413 047 100 s: (0.5) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 017 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 1250 : 7.60...7.80 Opening travel mm : 207...210 : 1350 pressure, bar 2nd speed rpm : 8.60...9.00 travel mm : 350 Orifice plate 3rd speed rpm diameter mm : 0,6 travel mm : 1.20...1.60 4th speed : 800 man : 4.90...5.50 travel mm Test lines : 1 680 750 008 FULL LOAD DELIV. AT FULL LOAD STOP Outside diameter x Wall thickness 1st version : 6.00X2.00X600 x Length mm Speed rpm : 1200 Aneroid pressure h: 700 Anerotu p. Del.quantity 1000 : 140.0...142.0 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. : (138.0...144.0) : 3.50 Spread cm3 per values 1000 : (6.00) BEGINNING OF DELIVERY RATED SPEED Test pressure, bar: 30...32 1st version

Control lever

position degrees: 42...50

Testing:

1st rack travel in: 11.30

Speed rpm : 1240...1250 2nd rack travel in: 4.00

Speed rpm : 1370...1400

4th rack travel in: 1455

rpm : 0.00...1.00Speed

LOW IDLE 1

Control Lever

position degrees: 11...19

Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 7.2

Testing:

Speed rpm : 100

Minimum rack trave: 9.00 Speed : 350 riom

Rack travel in mm : 7.10...7.30

CONSTANT REGULATION

rpm : 360...500 Speed

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1200 Rack travel in m: 12.30...12.40

rpm : 750 2nd speed

Rack travel in m: 13.00...13.10

rpm : 1000 3rd speed

Rack travel in m: 12.40...12.60

4th speed rpm : 900

Rack travel in m: 12.60...12.80

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 500 rpm

Pressure hPa : -

: 11.30...11.40 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : 390

Rack travel in m: 11.50...11.60

2nd pressure hPa : 480

Rack travel in m: 12.00...12.30

3rd pressure hPa : 700

Rack travel in m: 13.00...13.10

START CUT-OUT

Speed 1/min : 220 (240)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm

Del.quantity cm3/: 144.0...147.0 1000 s: (141.5...149.5)

cm3 : 5.00

Spread 1000 s: (7.0)

Aneroid pressure h:

Speed rpm : 500 Del.quantity cm3/ : 111.0...113.0 1000 s: (109.0...115.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.30

rpm : 1240...1250 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 205.0...225.0

1000 s: (202.0...228.0)

LOW IDLE

Speed rpm : 350 Rack travel in mm : 7.10...7.30

Del.quantity cm3/: 12.0...16.0 1000 s: (10.0...18.0) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

: CDC #3916000

Start-of-delivery mark at 10° cam

rotation angle after start of delivery,

cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 4,0 H 3 Edition : 19.03.91 Replaces : 18.02.91 Test oil : ISO-4113 Combination no. : 0 403 444 123 Injection pump EP type number : 0 413 404 104 Governor : 0 420 083 240 Governer no. Customer-spec, information Customer : MB-NFZ Engine : 0M364A : 79.0 1st version kW Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Openina pressure, bar : 172...175 Test Lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Pump designation : PES4MW100/720RS1151 Governor design. : RQV300...1300MW50-16 per values BEGINNING OF DELIVERY Test pressure, bar: 30...32 : 3.70...3.80 Prestroke mm : (3.65...3.85) Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2 Phasing : 0-90-180-270 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1300 Rack travel in mm : 10.80...10.90 Del.quantity cm3/: 8.2...8.4 100 s: (8.0...8.6) cm3 : 0.3Spread 100 s: (0.6) 2nd speed rpm : 300.0 Rack travel in mm : 6.3...6.5 Del.quantity cm3/ : 1.0...1.4 100 s: (0.7...1.6) Spread cm3 : 0.3100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 1350 1st speed travel mm : 8.40...8.80 : 880 2nd speed rom : 4.90...5.10 travel mm 3rd speed : 500 rpm : 2.70...3.30 travel mm 4th speed : 300 rpm : 1.20...1.60 travel mm GUIDE SLEEVE POSITION Control-Lever position Degree: -1 rpm : 1350 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1300 Aneroid pressure h: 700 Del.quantity : 82.0...84.0 1000 : (80.0...86.0) Spread cm3 : 3.50 : (6.00) 1000 RATED SPEED

1st version Control lever Speed position degrees: 108...116 Testina: 1st rack travel in: 9.80 rpm : 1340...1350 Speed 1st version 2nd rack travel in: 4.00 Speed rpm: 1420...1450 4th rack travel in: 1500 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 72...80 Speed Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 6.4 Testina: **BREAKAWAY** Speed rpm : 200 Minimum rack trave: 8.00 1st version Speed rpm : 300 Rack travel in mm : 6.30...6.50 Rack travel in mm : 2.00 rpm : 480...540 Speed Speed TORQUE CONTROL Dimension a mm : 0.70 Torque control curve - 1st version rpm : 1300 1st speed Speed Rack travel in m: 10.80...10.90 2nd speed rpm : 600 Rack travel in m: 11.90...12.00 3rd speed rpm : 1000
Rack travel in m: 11.90...12.00
4th speed rpm : 1175
Rack travel in m: 11.30...11.50 LOW IDLE Speed Aneroid/Altitude Compensator Test Spread 1st version Remarks: Setting : 500 Speed rpm Pressure hPa : -: 10.00...10.10 Rack travel mm Measurement Speed 1/min: 500 1st pressure hPa : 150 Rack travel in m: 10.30...10.50 2nd pressure hPa : 300 Rack travel in m: 11.20...11.40 3rd pressure hPa : 700 Rack travel in m: 11.90...12.00 START CUT-OUT

1/min: 200 (230) FUEL DELIVERY CHARACTERISTICS Aneroid pressure h: 700 Speed rpm : 600
Del.quantity cm3/: 75.0...78.0
1000 s: (72.5...80.5)
Spread cm3 : 5.00 1000 s: (7.0) Aneroid pressure h: rpm\_ : 500 Del.quantity cm3/: 46.0...48.0 1000 s: (44.0...50.0) 1mm rack travel less than full load rack tr: 9.80 rpm : 1340...1350 STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0) rpm : 300 Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) cm3 : 3.501000 s: (5.50)

Note remarks

Test sheet : MB 4,0 I 1 : 19.03.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 403 444 126

Injection pump

Pump designation : PES4MW100/720RS1212

: 0 413 404 114 EP type number

Governor

Governor design. : RQV300/1300MW105-5

Governer no. : 0 420 082 053

Customer-spec. information Customer : MB-NFZ

Engine : 0M364LA

: 102.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. Values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 4- 2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm : 13001st speed

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 10.1...10.3

100 s: (9.9...10.5)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 6.4...6.6 Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: 109 Speed rpm : 800

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 700

Del.quantity : 101.0...103.0 1000 : (99.0...105.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 107...115

Setting point:

Speed rpm Rack travel in mm: 15.5

Testing:

1st rack travel in: 12.20

Speed rpm : 1340...1350 2nd rack travel in: 4.00

rpm : 1445...1475 Speed

**J17** 

4th rack travel in: 1550 Speed rpm : 0.00...1.00 LOW IDLE 1 Control Lever position degrees: 72...80 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.5 Testing: rpm : 200 Speed Minimum rack trave: 8.00 rpm : 300 Rack travel in mm : 6.40...6.60 CONSTANT REGULATION rom : 320...550 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom hPa : -Pressure : 10.10...10.20 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 200 Rack travel in m: 10.90...11.10 2nd pressure hPa : 400 Rack travel in m: 12.60...12.80 3rd pressure hPa : 700 Rack travel in m: 13.20...13.30 START CUT-OUT Speed 1/min : 200 (230) FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 700 Speed rpm : 600 Del.quantity cm3/: 86.0...89.0 1000 s: (83.5...91.5) cm3 : 5.00 Spread 1000 s: (7.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 36.0...38.0 1000 s: (34.0...40.0)

1st version 1mm rack travel less than full load rack tr: 12.20 Speed rpm : 1340...1350 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 85.0...95.0 1000 s: (82.0...98.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) cm3 : 3.50 1000 s: (5.50) Spread Remarks:

Note remarks

Test sheet Edition

: PER 10,0 S : 18.02.91

Replaces

Test oil

: ISO-4113

Combination no. : 0 403 446 250

Injection pump

Pump designation : PES6MW100/320RS1194

EP type number

: 0 413 406 186

Governor

Governor design. : RQV300...1300MW108K

Governer no.

: 0 420 083 998

Customer-spec. information Customer

: PERKINS

Engine

: 180 TI

1st version kW

: 134.0

Rated speed

: 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C

: 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly

: 1 688 901 101

Opening.

pressure, bar

: 207...210

Orifice plate

diameter mm

: 0,6

Test lines

: 1 680 750 008

Outside diameter

x Wall thickness

x Length mm

: 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm

: 3.30...3.40 : (3.25...3.45)

Rack travel in mm : 12.00...14.00 Firing order : 1-5-3-6-2-4

Phasing

: 0-60-120-180-240-300

Tolerance + - °

: 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed

rpm : 1300

Rack travel in mm : 14.30...14.40

Del.quantity cm3/: 13.4...13.6

100 s: (13.2...13.8)

Spread

Spread

cm3 : 0.3

100 s: (0.6)

rpm : 300.02nd speed

Rack travel in mm: 6.1...6.3

Del.quantity cm3/: 1.4...1.8

100 s: (1.1...2.0)

cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed

rpm : 1350

travel mm

: 10.00...10.40

2nd speed

rpm : 900

travel mm

: 6.40...6.60

3rd speed travel mm

4th speed

: 480 rpm

man

3.10...3.70

300

travel mm

: 1.40...1.80

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1380

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

Speed

rpm : 1300

Aneroid pressure h: 900

Del.quantity : 134.0...136.0 1000 : (132.0...138.0)

Spread cm3 : 3.50 Rack travel in m: 10.40...10.50 1000 : (6.00) 2nd pressure hPa : 220 Rack travel in m: 10.90...11.20 3rd pressure hPa : 900 RATED SPEED Rack travel in m: 11.80...11.90 1st version Control lever START CUT-OUT position degrees: 116...124 1/min: 220 (240) Speed Testina: 1st rack travel in: 13.30 FUEL DELIVERY CHARACTERISTICS Speed rpm : 1340...1350 2nd rack travel in: 4.00 rpm : 1480...1510 Speed 1st version 4th rack travel in: 1600 Aneroid pressure h: 900 rpm : 0.00...1.00 : 800 Speed rpm Del.quantity cm3/: 126.0...129.0 1000 s: (123.5...131.5) LOW IDLE 1 Control lever cm3 : 5.00 Spread 1000 s: (7.0) position degrees: 70...78 Setting point w/out bumper spring Aneroid pressure h: 900 Speed rpm : 500 Del.quantity cm3/ : 107.5...110.5 1000 s: (105.0...113.0) rpm Rack travel in mm: 6.2 Testina: Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 77.0...79.0 1000 s: (75.0...81.0) Speed rpm : 200 Minimum rack trave: 7.50 rpm : 300 Rack travel in mm : 6.10...6.30 CONSTANT REGULATION **BREAKAWAY** rpm : 330...500 Speed 1st version TORQUE CONTROL 1mm rack travel less than Torque control curve - 1st version 1st speed rpm : 1300 full load rack tr: 13.30 Rack travel in m: 14.30...14.40 rpm : 1340...1350 Speed 2nd speed rpm : 800
Rack travel in m: 13.30...13.40
3rd speed rpm : 500
Rack travel in m: 11.80...11.90 STARTING FUEL DELIVERY 4th speed rpm : 1000 rpm : 100 Speed Rack travel in m: 13.60...13.80 Del.quantity cm3/: 90.0...100.0 5th speed rpm : 700 1000 s: (87.0...103.0) Rack travel in m: 12.70...12.90 Rack travel in mm : 19.00...21.00 Aneroid/Altitude LOW IDLE Compensator Test Speed rpm : 300 Rack travel in mm : 6.10...6.30 Del.quantity cm3/: 14.0...18.0 1000 s: (11.5...20.5) Spread cm3: 3.50 1000 s: (5.50) 1st version Setting Speed : 500 rom hPa : -Pressure : 10.20...10.30 Rack travel mm Remarks: Measurement Speed 1/min: 500 1st pressure hPa : 180

J20

BOSCH INJ. PUMP TEST SPECIFICATIONS Firing order : 1-5-3-6-2-4 Note remarks Test sheet Edition : IHC 6,2 G : 22.03.91 Phasing : 0-60-120-180-240-300 Replaces Tolerance + - ° : 0.50 (0.75) Test oil : ISO-4113 BASIC SETTING Combination no. : 0 403 446 265 rpm: 1250 1st speed Injection pump Pump designation: PES6MW100/320RS1154 Rack travel in mm : 12.90...13.00 EP type number : 0 413 406 144 Governor Del.quantity cm3/: 9.9...10.1 Governor design. : RQV275...1250MW113 Governer no. : 0 420 083 228 100 s: (9.7...10.3) Customer-spec. information cm3 : 0.3Spread Customer : RVI 100 s: (0.6) Engine : MIDR 060226 Q 2nd speed rpm : 275.0
Rack travel in mm : 6.1...6.3
Del.quantity cm3/ : 2.3...2.7
100 s: (2.0...2.9) 1st version kW : 128.7 : 2500 Rated speed cm3 : 0.3TEST BENCH REQUIREMENTS Spread 100 s: (0.5) Test oil inlet temp. °C : 38...42 (B) Setting of injection pump with governor Overflow valve : 2 417 413 033 GUIDE SLEEVE TRAVEL rpm : 1475 1st speed : 9.20...9.60 Inlet press., bar: 1.50 travel mm rpm : 1300 2nd speed Test nozzle holder : 7.80...8.00 travel mm 3rd speed assembly : 0 681 343 009 rpm : 500 : 3.00...3.60 travel mm rpm : 275 Opening 4th speed : 172...175 : 1.00...1.40 pressure, bar travel mm GUIDE SLEEVE POSITION Test lines Control-lever position : 1 680 750 008 Degree: -1 rpm : 1360 Outside diameter x Wall thickness Rack travel in mm : 15.20...17.80 x Length mm : 6.00x2.00x600 FULL LOAD DELIV. AT FULL LOAD STOP (A) Injection pump setting values Insp. values in parentheses 1st version Set equal delivery quant. Speed rpm : 1250 per values Aneroid pressure h: 1000 99.5...101.5 1000 : (97.5...103.5) Del.quantity BEGINNING OF DELIVERY : 3.50 Test pressure, bar: 30...32 Spread cm3 1000 : (6.00)

RATED SPEED

Prestroke mm

: 3.50...3.60 : (3.45...3.65)

Rack travel in mm : 16.50...19.50

1st version Control lever position degrees: 129...137 Testina:

1st rack travel in: 12.00 Speed rpm : 1330...1350 2nd rack travel in: 4.00 Speed rpm : 1490...1530 4th rack travel in: 1600

rpm : 0.00...1.00Speed

LOW IDLE 1 Control Lever position degrees: 77...85 Setting point w/out bumper spring

rpm : 275 Speed Rack travel in mm: 6.2

Testing: : 200 Speed rpm Minimum rack trave: 7.70 Speed : 275 rpm

Rack travel in mm : 6.10...6.30

Aneroid/Altitude Compensator Test

1st version Settina Speed : 500 rpm Pressure hPa : 1000

Rack travel mm : 12.90...13.00

Measurement 1/min: 500 Speed

1st pressure hPa :-Rack travel in m: 11.20...11.30 2nd pressure hPa : 200

Rack travel in m: 11.50...11.80

3rd pressure hPa : 360

Rack travel in m: 12.60...12.70

START CUT-OUT

1/min: 200 (220) Speed

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 1000 Speed rpm : 750 Del.quantity cm3/: 91.5...94.5 1000 s: (89.0...97.0)

cm3 : 5.00 Spread 1000 s: (7.0) Aneroid pressure h: -

J23

Speed rpm Del.quantity cm3/: 49.0...51.0

1000 s: (47.0...53.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.00 rpm : 1330...1350 Speed

STARTING FUEL DELIVERY

Speed : 100 rpm

Del.quantity cm3/: 88.0...102.0

1000 s: (85.0...105.0) Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 275
Rack travel in mm : 6.10...6.30
Del.quantity cm3/ : 23.0...27.0
1000 s: (20.5...29.5)
Spread cm3 : 3.50

1000 s: (5.00)

Remarks:

FEHLENDEN TEXT LIBERSETZEN

Note remarks

Test sheet : MB 6,1 D Edition : 22.03.91

Replaces : -

Test oil : ISO-4113

Combination no. : 0 403 446 273

Injection pump

Pump designation : PES6MW100/720RS1131

EP type number : 0 413 406 123

Governor

Governor design. : RQV300...1300MW50-13

Governer no. : 0 420 083 236

Customer—spec. information Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 121.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

**Openina** 

pressure, bar : 172...175

Test Lines : 1 680 715 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm: 10.90...11.00

Del.quantity cm3/: 8.8...9.0

100 s: (8.6...9.2)

Spread cm3:0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 6.2...6.4 Del.quantity cm3/ : 1.0...1.4

100 s: (0.7...1.6)

Spread cm3 : 0.3 100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

travel mm : 9.40...9.80

2nd speed rpm : 1350

travel mm : 8.40...8.60

3rd speed rpm : 600

travel mm : 3.90...4.50

4th speed rpm : 300

travel mm : 0.80...1.20

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm: 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1300 Aneroid pressure h: 700

Del.quantity : 88.0...90.0

1000 : (86.0...92.0)

Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

J24

1st version Control lever position degrees: 112...120 1st version Testing: Speed 1st rack travel in: 9.90 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 Spread Speed rpm : 1430...1460 4th rack travel in: 1550 rom : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 78...86 Setting point w/out bumper spring **BREAKAWAY** rpm : 300 Rack travel in mm: 6.3 1st version Testing: speed rpm : 200 Minimum rack trave: 7.80 Speed Speed rpm : 300 Rack travel in mm : 6.20...6.40 TORQUE CONTROL Dimension a mm : 0.70 Speed Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 10.90...11.00 2nd speed rpm : 750 Rack travel in m: 11.60...11.70 LOW IDLE 3rd speed rpm : 1100 Speed Rack travel in m: 11.10...11.30 Aneroid/Altitude Compensator Test 1st version Remarks: Setting : 500 Speed rpm Pressure hPa : 290 Rack travel mm : 10.20...10.30 Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 9.60...9.70 2nd pressure hPa : 400 Rack travel in m: 11.00...11.30 3rd pressure hPa : 700 Rack travel in m: 11.60...11.70 START CUT-OUT Speed 1/min: 200 (230)

Aneroid pressure h: 700 rpm : 750 Del.quantity cm3/: 86.0...89.0 1000 s: (83.5...91.5) cm3 : 5.00 1000 s: (7.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 49.0...51.0 1000 s: (47.0...53.0) 1mm rack travel less than full load rack tr: 9.90 rpm : 1340...1350 STARTING FUEL DELIVERY rom : 100 Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0) : 300 rpm Rack travel in mm : 6.20...6.40 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) Spread cm3: 3.50 1000 s: (5.50)

FUEL DELIVERY CHARACTERISTICS

Note remarks

Test sheet : KHD 6,1 N 8 : 22.03.91 Edition Replaces : 18.02.91

Test oil : ISO-4113

: 0 403 446 277 Combination no.

Injection pump

Pump designation: PES6MW100/720RS1133

EP type number : 0 413 406 126

Governor

Governor design. : RQV300...1325MW114

: 0 420 083 241 Governer no.

Customer-spec. information

Customer

: KHD

: BF 6L 913 Engine

1st version kW : 124.0 : 2650 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasina · 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1325 1st speed

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 10.1...10.3

100 s: (9.9...10.5)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 6.8...7.0

Del.quantity cm3/: 1.1...1.5

100 s: (0.9...1.7) cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1375 1st speed

: 10.00...10.40 travel mm

rpm : 975 2nd speed

travel mm : 6.50...6.70

rpm : 575 3rd speed

: 3.10...3.70 travel mm

rpm : 300 4th speed

: 0.50...0.90 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 Speed rpm : 1225 Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1325 Speed

Aneroid pressure h: 900

: 101.0...103.0 Del.quantity

1000 : (99.0...105.0)

cm3 : 3.50 1000 : (6.00) Spread

RATED SPEED

1st version Control lever position degrees: 100...108 Testing: 1st rack travel in: 9.50 Speed rpm : 1365...1375 2nd rack travel in: 4.00 Speed rpm : 1430...1460 4th rack travel in: 1550 rpm : 0.10...1.00Speed LOW IDLE 1 Control lever position degrees: 64...72 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 6.9 Testing: rpm : 200 Speed Minimum rack trave: 8.50 rpm : 300 Speed Rack travel in mm : 6.80...7.00 Rack travel in mm : 2.00 Speed rom : 430...490 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed nom hPa : 450 Pressure : 9.90...10.00 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 8.90...9.00 2nd pressure hPa : 350 Rack travel in m: 9.30...9.60 3rd pressure hPa : 900 Rack travel in m: 10.50...10.60 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 900 rpm : 800 Del.quantity cm3/: 93.0...97.0 1000 s: (91.0...99.0)

Spread cm3 : 3.501000 s: (7.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 57.0...59.0 1000 s: (55.0...61.0) RACK STOP ADJUSTMENT Speed rpm : 100 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.50 rpm : 1365...1375 Speed STARTING FUEL DELIVERY : 100 Speed rpm Del.quantity cm3/: 120.0...130.0 1000 s: (117.0...133.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 6.80...7.00 Del.quantity cm3/: 11.0...15.0 1000 s: (9.0...17.0) cm3 : 3.50 Spread 1000 s: (5.00) Remarks: Check electrically unlatched starting fuel delivery (EES) with 24 volt.

Note remarks

Test sheet : MB 6.1 D 4 Edition : 19.03.91

Replaces

Test oil : ISO-4113

Combination no. : 0 403 446 278

Injection pump

Pump designation: PES6MW100/720RS1131

: 0 413 406 123 EP type number

Governor

Governor design. : RQV300...1300MW50-17

: 0 420 083 244 Governer no.

Customer-spec. information Customer : MB-NFZ

Engine : 0M 366 LA

1st version kW : 150.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm

: (3.65 .3.85) Rack travel in mm : 9.00. 12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 12.20...12.30

Del.quantity cm3/: 9.6...9.8

100 s: (9.4...10.0)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 6.1...6.2

Del.quantity cm3/: 0.9...1.3 100 s: (0.7...1.5)

Spread cm3 : 0.3

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1500

: 9.80...10.20 travel mm

2nd speed rpm : 1350

: 8.40...8.60 travel mm

3rd speed rpm : 670

travel mm : 4.60...5.20

: 300 4th speed rpm

: 1.10...1.50 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1370 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed

Aneroid pressure h: 700

Aneroid p. Del.quantity 1000

: 96.5...98.5 : (94.5...100.5)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever position degrees: 107...115 Testina: 1st rack travel in: 11.20 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1450...1480 Speed 4th rack travel in: 1550 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 57...65 Setting point w/out bumper spring rpm : 300 Rack travel in mm: 6.1 Testing: Speed rpm : 100 Minimum rack trave: 7.60 Speed rpm: 300 Rack travel in mm : 6.10...6.20 CONSTANT REGULATION rpm : 350...550 Speed Aneroid/Al'itude Compensator Test 1st version Setting Speed rpm : 500 hPa : -Pressure Rack travel mm : 10.50...10.60 Measurement 1/min : 500 Speed 1st pressure hPa : 170 Rack travel in m: 10.90...11.00 2nd pressure hPa : 225
Rack travel in m: 11.80...12.10
3rd pressure hPa : 700
Rack travel in m: 12.20...12.30 START CUT-OUT Speed 1/min : 220 (250) FUEL DELIVERY CHARACTERISTICS

Spread cm3 : 5.00 1000 s: (7.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 50.5...52.5 1000 s: (48.5...54.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.20 Speed rpm : 1340...1350

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 90.0...100.0 1000 s: (87.0...103.0)

LOW IDLE

Remarks:

Speed

1st version

Aneroid pressure h: 700

rpm : 575

1000 s; (79.5...87.5)

Del.quantity cm3/: 82.0...85.0

Note remarks

: MB 6,1 D 3 Edition : 19.03.91

Replaces

Test oil : ISO-4113

Combination no. : 0 403 446 279

Injection pump

Pump designation : PES6MW100/720RS1131

: 0 413 406 123 EP type number

Governor

Governor design. : RQV300/1200MW105-6

: 0 420 082 054 Governer no.

Customer-spec. information

Customer : MB-NFZ

Engine : OM 366 A

1st version kW : 115.0

: 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening |

pressure, bar : 172...175

Test lines : 1 680 715 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values

Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm

: (3.65...3.75)

Rack travel in mm : 9.00...12.00

Test sheet

Phasing

: 0-60-120-180-240-300

: 1-5-3-6-2-4

Tolerance + - °

Firing order

: 0.50 (0.75)

BASIC SETTING

1st speed

rpm: 1200

Rack travel in mm : 16.20...10.30

Del.quantity cm3/: 8.4...8.6

100 s: (8.2...8.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 5.6...5.8

Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVFL

travel mm : 7.40...7.80

: 4.90...5.10 travel mm

2.70...3.10 travel mm : 1.20...1.60 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: 107 rpm : 800

Rack travel in mm : 14.70...16.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200

Aneroid pressure h: 700

: 84.0...86.0 Del.quantity

1000 : (82.0...88.0) cm3 : 3.50 1000 : (6.00)

Spread

RATED SPEED

1st version

Control lever

position degrees: 105...113

K02

Setting point: Speed Lbur . Rack travel in mm: 15.5 Testing: 1st rack travel in: 9.20 rpm : 1240...125G Speed 2nd rack travel in: 4.00 rpm : 1335...1365 Speed 4th rack travel in: 1450 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 73...81 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 5.7 Testing: speed rpm : 200 Minimum rack trave: 7.50 : 300 Speed rpm Rack travel in mm : 5.60...5.80 Rack travel in mm: 2.00 Speed : 410...470 rpm TORQUE CONTROL Dimension a mm : 0.90 Torque control curve - 1st version 1st speed rpm : 1200

Rack travel in m: 10.20...10.30 2nd speed rpm : 600 Rack travel in m: 11.10...11.20 rpm : 1100 3rd speed Rack travel in m: 10.30...10.60 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm hPa : 200 Pressure Rack travel mm : 8.90...9.00 Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 8.60...8.70 2nd pressure hPa : 350 Rack travel in m: 10.20...10.50 3rd pressure hPa : 700

Rack travel in m: 11.10...11.20

1/min : 200 (230)

FUEL DELIVERY CHARACTERISTICS

1st version Aneroid pressure h: 700 rpm : 600 Speed

Del.quantity cm3/: 78.0...81.0 1000 s: (75.5...83.5)

Spread cm3 : 5.00 1000 s: (7.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 44.0...46.0 1000 s: (42.0...48.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 9.20

Speed rpm : 1240...1250

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0)

LOW IDLE

rpm : 300 Speed

Rack travel in mm : 5.60...5.80 Del.quantity cm3/: 10.0...14.0

1000 s: (7.5...16.5)

cm3 : 3.50Spread 1000 s: (5.50)

Remarks:

**K03** 

Speed

START CUT-OUT

BOSCH IN.I. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 6,1 B 4 : 22.03.91 Edition Replaces Test oil : ISO-4113 Combination no. : 0 403 446 280 Injection pump Pump designation : PES6MW100/720RS1131-EP type number : 0 413 406 165 Governor : RQV300...1300MW50-19 Governor design. : 0 420 083 245 Governer no. Customer spec. information Customer : MB-NFZ : 0M366LA Engine 1st version kW : 155.0 Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly **Opening** : 172...175 pressure, bar Test lines : 1 680 750 015 Outside diameter x Wall thickness : 6.00x1.50x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

Phasing : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) BASIC SETTING rpm: 1300 1st speed Rack travel in mm : 13.10...13.20 Del.quantity cm3/: 9.8...10.0 100 s: (9.6...10.2) cm3 : 0.3Spread 100 s: (0.6) rpm : 300.02nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 1.0...1.4 100 s: (0.7...1.6) cm3 : 0.3Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL :pm : 1450 1st speed : 9.50...9.90 travel mm rpm : 1350 2nd speed travel mm : 8.40...8.60 3rd speed rpm : 600 : 3.90...4.50 travel mm rpm : 300 4th speed : 0.80...1.20 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1350 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LCAD STOP 1st version Speed rpm. . 1300 Aneroid pressure h: 1000 Del.quantity : yo.u...102.0) : 3.50 Spread cm3 1000 : (6.00) RATED SPEED

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

per values

Prestroke mm

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.60...3.70 : (3.55...3.75)

1st version Control Lever position degrees: 99...107 Testing: 1st rack travel in: 12.10 Speed rpm: 1345...1355 2nd rack travel in: 4.00 Speed rpm : 1435...1465 4th rack travel in: 1550 Speed rpm : 0.00...1.00LOW IDLE 1 Control Lever position degrees: 70...78 Setting point w/out bumper spring rom Rack travel in mm: 6.5 Testing: Speed : 200 rpm: Minimum rack trave: 8.00 : 300 rpm Speed Rack travel in mm : 6.40...6.60 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed rom Pressure hPa : -Rack travel mm : 10.30...10.40 Measurement  $1/\min : 500$ Speed 1st pressure hPa : 200 Rack travel in m: 11.20...11.30 2nd pressure hPa : 350
Rack travel in m: 12.40...12.70
3rd pressure hPa : 1000
Rack travel in m: 13.10...13.20 START CUT-OUT 1/min : 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm: 750
Del.quantity cm3/: 87.0...91.0
1000 s: (85.0...93.0) cm3 : 5.00 Spread 1000 s: (7.0)

Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 36.0...38.0 1000 s: (34.0...40.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 12.10 Speed rpm : 1345...1355 STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0) LOW IDLE rpm : 300 Speed Rack travel in mm : 6.40...6.60 Del.quantity cm3/: 10.0...14.0 1000 s: (7.5...16.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks:

K05

Note remarks

: MAN 7,3 C Test sheet : 19.03.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 403 456 113

Injection pump

Pump designation : PES6MW100/321RS1210

: 0 413 406 201 EP type number

Governor

Governor design. : RQ250/1050MW84-6 : 0 420 082 049 Governer no.

Customer-spec. information Customer : MAN

Engine : D 0826 LUH 250

: 184.0 1st version kW : 2100 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00x2.00x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60 : (3.45...3.65)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 14.00...14.10

Del.quantity cm3/: 15.9...16.1

100 s: (15.7...16.3)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 250.0 2nd speed Rack travel in mm : 4.9...5.1 Del.quantity cm3/ : 1.3...1.7 100 s: (1.0...1.9)

cm3 : 0.3Spread 100 s: (0.5)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

rpm : 1125 1st speed

: 7.30...7.70 travel mm 2nd speed rpm : 1050

travel mm : 6.10...6.30

3rd speed rpm : 400

: 5.70...6.30 travel mm

rpm : 250 4th speed

travel mm : 2.50...2.90

GUIDE SLEEVE POSITION Control-lever position

Degree: 98

rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1050 Aneroid pressure h: 1100

Del.quantity 1000 : 159.0...161.0

: (157.0...163.0)

: 3.50 cm3 Spread

1000 : (6.00)

K06

# RATED SPEED 1st version Control Lever position degrees: 95...103 Setting point: : 600 LDU Rack travel in mm: 20.0 Testing: 1st rack travel in: 13.00 rpm : 1075...1090 2nd rack travel in: 4.00 Speed rpm : 1130...1160 4th rack travel in: 1250 rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever position degrees: Setting point w/out Speed rpm : Rack travel in mm :	bumper spring
Testing: Speed rpm: Minimum rack trave: Speed rpm: Rack travel in mm:	7.50 250
TORQUE CONTROL Torque control curv 1st speed rpm : Rack travel in m: 2nd speed rpm : Rack travel in m: 3rd speed rpm : Rack travel in m:	1050 14.0014.10 600 14.0014.10 800
Aneroid/Altitude Compensator Test	
Pressure hPa :	500 190 10.3010.40
Measurement Speed 1/min:	500

1st version Aneroid pressure h: 1100 Speed rpm : 600 Del.quantity cm3/ : 162.0...165.0 1000 s: (159.5...167.5) cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: 1100 rpm : 800 Del.quantity cm3/: 161.0...164.0 1000 s: (158.5...166.5) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 77.0...79.0 1000 s: (75.0...81.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.00 rpm : 1075...1090 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 130.0...140.0 1000 s: (127.0...143.0) LOW IDLE Speed rpm: 250
Rack travel in mm: 4.90...5.10
Del.quantity cm3/: 13.0...17.0 1000 s: (10.5...19.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks: : MAN #3-7127

FUEL DELIVERY CHARACTERISTICS

1st pressure hPa : -

2nd pressure hPa : 870

3rd pressure hPa : 1100

Rack travel in m: 10.00...10.10

Rack travel in m: 13.30...13.60

Rack travel in m: 14.00...14.10

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD 4,1 H 2 Edition : 19.03.91 Replaces Test oil : ISO-4113 Combination no. : 0 403 474 014 Injection pump Pump designation : PES4MW100/720RS1187 EP type number : 0 413 404 108 Governor Governor design. : RS300/1250MW0A344 Governer no. : 0 420 084 002 Customer-spec. information Customer : KHD : BF 4L 913C Engine 1st version kW : 92.0 : 2500 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 D47 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening : 172...175 pressure, bar Test Lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00X2.00X600 (A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 30...32

Prestroke mm : 3.95...4.05 : (3.90...4.10) Rack travel in mm : 9.00...12.00

Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1250

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 11.8...12.0

100 s: (11.6...12.2)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 8.0...8.2 Del.quantity cm3/: 1.2...1.6

100 s: (0.9...1.8)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.20

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed Aneroid pressure h: 1000

Del.quantity : 118.0...20.0 1000 : (116.0...122.0) Spread cm3 : 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 105...113

Setting point:

Speed rpm Rack travel in mm: 0.6

**K08** 

Testing:

1st rack travel in: 11.90

rpm : 1290...1300 Speed

2nd rack travel in: 4.00

rpm : 1385...1415 Speed

4th rack travel in: 1550

rom : 0.30...1.70Speed

LOW IDLE 1

Control lever

position degrees: 76...84

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 7.6

speed rpm : 300
Rack travel in mm : 7.50...7.70
Rack travel in mm : 2.00
Speed : 370...430

rom

TORQUE CONTROL

Dimension a mm : 0.30

Torque control curve - 1st version

1st speed

st speed rpm : 1250 Rack travel in m: 12.90...13.00

: 800 2nd speed rpm

Rack travel in m: 13.20...13.30

rpm : 900 3rd speed

Rack travel in m: 13.10...13.30

4th speed rpm : 1000

Rack travel in m: 12.90...13.10

Aneroid/Altitude

Compensator Test

1st version

Setting

: 500 Speed rpm

hPa : -Pressure

: 10.80...10.90 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : 320 Rack travel in m: 11.60...11.70

2nd pressure hPa : 470

Rack travel in m: 12.30...12.60

3rd pressure hPa : 1000

Rack travel in m: 13.20...13.30

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

rpm : 800 Speed

Del.quantity cm3/: 113.5...116.5 1000 s: (111.0...119.0)

cm3 : 3.50 1000 s: (7.0) Spread

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 66.0...68.0

1000 s: (64.0...70.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.90

rpm : 1290...1300 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 120.0...130.0 1000 s: (117.0...133.0)

LOW IDLE

Speed rpm : 300

Rack travel in mm : 8.00...8.20

Del.quantity cm3/: 12.0...16.0 1000 s: (9.5...18.5) Spread cm3 : 3.50 1000 s: (5.00)

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

Note remarks

Test sheet : MB 6,0 D 77 : 27.02.91

Replaces Test oil

Combination no. : 0 403 476 087

Injection pump

Pump designation : PES6MW100/720RS1144

EP type number : 0 413 406 138

Governor

Governor design. : RSV350...1200MW0A341 Governer no. : 0 420 085 145

Customer-spec. information Customer : MB-NFZ

Engine

: 100.0 Rated speed : 2400

inlet temp. °C : 38...42

Overflow valve

Opening.

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

Insp. values in parentheses Set equal delivery quant.

BEGINNING OF DELIVERY

Prestroke mm

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Edition

: 16.08.90 : ISO-4113

: 0M366A

1st version kW

TEST BENCH REQUIREMENTS

Test oil

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

pressure, bar : 172...175

x Length mm : 6.00x1.50x600

(A) Injection pump setting values

per values

Test pressure, bar: 30...32

: 3.70...3.80

Phasing

: 0-60-120-180-240-300

: 1-5-3-6-2-4

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

Firing order

1st speed rpm: 1200

Rack travel in mm : 10.20...10.30

Del.quantity cm3/: 6.9...7.1

100 s: (6.7...7.3)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 350.0 Rack travet in mm : 7.0...7.6 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5) cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

Del.quantity : 69.0...71.0 1000 : (67.0...73.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 98...106

Setting point:

Speed rpm Rack travel in mm: 0.6

Testing:

1st rack travel in: 9.20 Speed rpm : 1240...1245 \*

K10

2nd rack travel in: 4.00

rpm : 1280...1293 Speed

3rd rack travel in: 4.00

: 1310...1340 Speed man:

4th rack travel in: 1450

Speed rpm : 0.30...1.705th rack travel in: 1240...1255

rpm : 9.20 Speed

LOW IDLE 1

Setting point w/out bumper spring

rpm Rack travel in mm: 7.3

Testing:

rpm : 100 Speed Minimum rack trave: 19.00

Speed rpm : 350
Rack travel in mm : 7.00...7.60
Rack travel in mm : 2.00

rpm : 440...500

TORQUE CONTROL

Dimension a mm : 0.90

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 10.20...10.30

2nd speed rpm : 800

Rack travel in m: 11.10...11.20

3rd speed rpm : 900 Rack travel in m: 11.00...11.20

4th speed rpm : 1050

Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

: 800 Speed rpm

Del.quantity cm3/: 69.0...71.0

1000 s: (67.0...73.0)

cm3 : 5.00Spread

1000 s: (7.0)

STARTING FUEL DELIVERY

LOW IDLE

rpm : 350

Rack travel in mm : 7.00...7.60 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5)

Spread cm3 : 3.501000 s: (5.00)

Remarks:

Check pneumatic shutoff device at 3.0 bar air pressure

\* Read off speed set under 1. Add 40...48 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

# Note remarks

Test sheet : MB 6,0 D 92 Edition : 27.02.91 Replaces : 16.08.90 Test oil : ISO-4113

: 0 403 476 088 Combination no.

Injection pump

Pump designation : PES6MW100/720RS1144

EP type number : 0 413 406 138

Governor

Governor design. : RSV350...1300MW0A341

-1

: 0 420 085 146 Governer no.

Customer-spec. information Customer : MB-NFZ

Engine : 0M366A

: 125.0 1st version kW Rated speed : 2600

# TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 909 assembly

**Opening** 

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + -- ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 10.70...10.80

Del.quantity cm3/: 7.2...7.4

100 s: (7.0...7.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 7.0...7.6 Del.quantity cm3/ : 0.9...1.3

100 s: (0.6...1.5)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300

: 72.0...74.0 Del.quantity 1000 : (70.0...76.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 100...108

Setting point:

Speed rpm : 800 Rack travel in mm: 0.6

Testing:

1st rack travel in: 9.70

rpm : 1340...1345 \* Speed

2nd rack travel in: 4.00

Speed rpm : 1380...1393

3rd rack travel in: 4.00

rpm : 1400...1430 Speed

4th rack travel in: 1500

rpm : 0.30...1.70 Speed 5th rack travel in: 1345...1360

rpm : 9.70 Speed

LOW IDLE 1

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 Rack travel in mm : 2.00

Speed rom : 445...505

TORQUE CONTROL

Dimension a mm : 1.30

Torque control curve - 1st version

1st speed rpm : 1300

Rack travel in m: 10.70...10.80

rpm : 700 2nd speed

Rack travel in m: 11.90...12.00

3rd speed rpm : 825

Rack travel in m: 11.60...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

: 700 Speed rpm

Del.quantity cm3/: 69.0...71.0

1000 s: (67.0...73.0)

cm3 : 5.00Spread

1000 s: (7.0)

: 825 Speed rpm

Del.quantity cm3/: 73.0...76.0 1000 s: (70.5...78.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 9.70

rpm : 1340...1345 Speed

STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 78.0...88.0 1000 s: (75.0...91.0)

LOW IDLE

Speed : 350 rpm

**K13** 

Rack travel in mm : 7.00...7.60 Del.quantity cm3/: 9.0...13.0

1000 s: (6.5...15.5)

cm3 : 3.50Spread 1000 s: (5.50)

Remarks:

\* Read off speed set under 1. Add 40...48 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

Check pneumatic shutoff device at 3.0 bar air pressure

Note remarks

Test sheet : MB 6,0 D 93 : 27.02.91 Edition Replaces : 16.08.90 Test oil : ISO-4113

Combination no. : 0 403 476 089

Injection pump

Pump designation : PES6MW100/720RS1144

: 0 413 406 138 EP type number

Governor

Governor design. : RSV350...1200MW0A341

: 0 420 085 147 Governer no.

Customer-spec. information Customer : MB-NFZ

Engine : 0M366A

1st version kW : 115.0 : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm

: (3.65...3.85)

Rack travel in mm : 9.00...12.00 Firing order

: 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1200 1st speed

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 8.0...8.2

100 s: (7.8...8.4)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 7.0...7.6 Del.quantity cm3/: 0.9...1.1

100 s: (0.6...1.4)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 3.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1200 : 80.5...82.5 Del.quantity 1000 : (78.5...84.5)

Spread : 3.50 cm3

1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 99...107

Setting point:

rpm Rack travel in mm : 0.6

Testing:

1st rack travel in: 11.00

: 1240...1245 \* Speed man

2nd rack travel in: 4.00

rpm : 1285...1298 Speed

3rd rack travel in: 4.00

rpm : 1325...1355 Speed

4th rack travel in: 1453

rpm : 0.30...1.70 Speed 5th rack travel in: 1240...1255 Speed rpm : 11.00

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 7.3

Testing:

rpm : 100 Speed Minimum rack trave: 19.00 Speed rpm : 350
Rack travel in mm : 7.00...7.60
Rack travel in mm : 2.00

rpm : 445...505 Speed

TORQUE CONTROL

Dimension a mm : 0.50

Torque control curve – 1st version

rpm : 1200 1st speed

Rack travel in m: 12.00...12.10

2nd speed rpm : 750

Rack travel in m: 12.50...12.60

3rd speed rpm : 1000

Rack travel in m: 12.10...12.30

FUEL DELIVERY CHARACTERISTICS

1st version

: 750 Speed rpm

Del.quantity cm3/: 74.5...76.5 1000 s: (72.5...78.5)

cm3 : 5.00Spread

1000 s: (7.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 11.00

rpm : 1240...1245 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0

1000 s: (75.0...91.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 350 Rack travel in mm : 7.00...7.60 Del.quantity cm3/: 9.0...11.0 1000 s: (6.0...14.0) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

22° before top dead center with control-rod travel 6.0...8.0 mm.

\* Read off speed set under 1. Add 45...53 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

Note remarks

Test sheet : MB 6,0 D 94 : 27.02.91 : 16.08.90 Edition Replaces Test oil : ISO-4113

Combination no. : 0 403 476 090

Injection bump

Pump designation : PES6MW100/720RS1144

EP type number : 0 413 406 138

Governor

Governor design. : RSV350...1200MW1A341

: 0 420 085 148 Governer no.

Customer-spec. information Customer : MB-NFZ

: 0M366A Engine

: 92.0 1st version kW Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 30...32

: 3.70...3.80 : (3.65...3.85) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1200

Rack travel in mm : 9.80...9.90

Del.quantity cm3/: 6.2...6.4

100 s: (6.0...6.6)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 7.0...7.6 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5) cm3 : 0.3

Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...1.00

Governor spring pre-tension Click setting x : 3.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed

Del.quantity : 62.0...64.0 1000 : (60.0...66.0)

cm3 : 3.50 Spread

: (6.00) 1000

RATED SPEED

1st version Control lever

position degrees: 98...106

Setting point:

Speed rpm Rack travel in mm : 0.6

Testing:

1st rack travel in: 8.80

: 1235...1240 \* Speed COM

2nd rack travel in: 4.00

Speed rpm : 1270...1283 3rd rack travel in: 4.00

Speed rpm : 1300...1330 4th rack travel in: 1450

Speed rpm : 0.30...1.70 5th rack travel in: 1245...1260

rpm : 8.80 Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 7.3

Testing:

Speed rpm : 100 Minimum rack trave: 19.00

Speed rpm : 350 Rack travel in mm : 7.00...7.60

Rack travel in mm : 2.00

Speed : 415...475 rom

TORQUE CONTROL

Dimension a mm : 0.70

Torque control curve - 1st version

1st speed rpm : 1200

Rack travel in m: 9.80...9.90

2nd speed rpm : 800

Rack travel in m: 10.50...10.60

rpm : 950 3rd speed

Rack travel in m: 10.10...10.30

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 800 Del.quantity cm3/ : 60.5...63.5 1000 s: (58.0...66.0)

cm3 : 5.00Spread

1000 s: (7.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 8.80

Speed rpm : 1235...1240

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 78.0...88.0 1000 s: (75.0...91.0)

LOW IDLE

K17

Speed rpm : 350 Rack travel in mm : 7.00...7.60 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Check preumatic shutoff device at 3.0 bar air pressure

\* Read off speed set under 1. Add 35...43 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

Note remarks

: MB 6,0 D 95 : 27.02.91 : 16.08.90 Test sheet Edition

Replaces Test oil : ISO-4113

Combination no. : 0 403 476 091

Injection bump

Pump designation : PES6MW100/720RS1131

EP type number : 0 413 406 123

Governor

Governor design. : RSV350...1300MWOA342

: 0 420 085 149 Governer no.

Customer-spec. information Customer : MB-NFZ

: 0M 366 LA Engine

1st version kW : 150.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3,85)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 12.60...12.70

Del.guantity cm3/: 10.0...10.2

100 s: (9.8...10.4)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.02nd speed Rack travel in mm: 6.2...6.9 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5)

cm3 : 0.3 Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 1000

Del.quantity : (100.0...104.0)

cm3 : 3.50 Spread

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 90...98

Setting point:

Speed rom Rack travel in mm: 0.6

Testing:

1st rack travel in: 11.60

**K18** 

: 1340...1345 \* Speed rpm

2nd rack travel in: 4.00

Speed : 1387...1400 rpm

3rd rack travel in: 4.00

rpm : 1420...1450 Speed

4th rack travel in: 1600

Speed rpm : 0.30...1.70 5th rack travel in: 1345...1355

Speed rpm : 11.60

LOW IDLE 1

Setting point w/out bumper spring

rpm : 350 Rack travel in mm: 6.5

Testing:

Speed rpm : 100 Minimum rack trave: 19.00 : 350 Speed rpm

Rack travel in mm : 6.20...6.90 Rack travel in mm : 2.00

Speed rpm : 420...480

Aneroid/Altitude Compensator Test

1st version

Settina Speed

rom : 500 hPa : 250

Pressure Rack travel mm : 11.30...11.40

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 10.70...10.80

2nd pressure hPa : 400

Rack travel in m: 12.10...12.40
3rd pressure hPa : 1000
Rack travel in m: 12.60...12.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000 : 600 Speed rpm

Del.quantity cm3/: 86.5...89.5 1000 s: (84.0...92.0)

cm3 : 5.00Spread

1000 s: (7.0)

Aneroid pressure h: -

: 500 Speed rpm

Del.quantity cm3/: 53.0...55.0

1000 s: (51.0...57.0)

BREAKAWAY

**K19** 

1st version

1mm rack travel less than

full load rack tr: 11.60

rpm : 1340...1345 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 83.0...93.0

1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 350 Rack travel in mm : 6.20...6.90

Del.quantity cm3/ : 9.0...13.0 1000 s: (6.5...15.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

\* Read off speed set under 1. Add 47...55 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

Test hydr. locking device for starting with 500...1000 hPa air pressure.

Check pneumatic shutoff device at 3.0 bar air pressure

Note remarks

Test sheet : MB 6,0 D 96 : 27.02.91 Edition : 16.08.90 Replaces Test oil : ISO-4113

Combination no. : 0 403 476 092

Injection pump

Pump designation : PES6MW100/720RS1120 EP type number : 0 413 406 112

Governor

Governor design. : RSV350...1300MW0A342

: 0 420 085 150 Governer no.

Customer-spec. information Customer : MB-NF7

: DM 366 LA Engine

1st version kW : 142.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 647

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.50...3.60

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1300

Rack travel in mm: 13.00...13.10

Del.quantity cm3/: 9.5...9.7

100 s: (9.3...9.9)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm: 6.2...6.9 Del.quantity cm3/: 1.0...1.2

100 s: (0.6...1.5)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3

Speed rpm : 300 Rack travel in mm : 0.30...1.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 1000 Speed

Del.quantity : 95.0...99.0)

: 3.50

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 106...114

Setting point:

Rack travel in mm: 0.6

Testing:

1st rack travel in: 12.00

rpm : 1340...1345 \* Speed

2nd rack travel in: 4.00

Speed rpm : 1397...1410 3rd rack travel in: 4.00 rpm : 1460...1490 Speed 4th rack travel in: 1600 rpm : 0.30...1.70 Speed 5th rack travel in: 1335...1350 rpm : 12.00Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 350 Rack travel in mm : 6.5 Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 350 Rack travel in mm : 6.20...6.90 Rack travel in mm : 2.00 Speed rpm : 420...480 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom Pressure hPa : -Rack travel mm : 11.60...11.70 Measurement Speed 1/min: 500 1st pressure hPa : 300 Rack travel in m: 12.10...12.20 2nd pressure hPa : 360 Rack travel in m: 12.60...12.90 3rd pressure hPa : 1000 Rack travel in m: 13.00...13.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 750 Del.quantity cm3/: 83.0...86.0 1000 s: (80.5...88.5) cm3 : 5.00 Spread 1000 s: (7.0) Aneroid pressure h: -Speed rpm: 500 Del.quantity cm3/: 50.0...52.0 1000 s: (48.0...54.0)

1mm rack travel less than full load rack tr: 12.00 rpm : 1340...1345 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 85.0...95.0 1000 s: (92.0...98.0) LOW IDLE Speed rpm : 350 Rack travel in mm : 6.20...6.90 Del.quantity cm3/: 10.0...12.0 1000 s: (6.5...15.5) cm3 : 3.50 Spread 1000 s: (5.00) Remarks: \* Read off speed set under 1. Add 57...65 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile. Check pneumatic shutoff device at 3.0 bar air pressure Test hydr. Locking device for starting with 500...1000 hPa air pressure.

**BREAKAWAY** 

1st version

Prestroke mm : 3.60...3.70 : (3.55...3.75) Rack travel in mm : 9.00...12.00 BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : 1-5-3-6-2-4 Firing order Test sheet : MB 6,1 B : 27.02.91 Edition Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 : 0 403 476 097 Combination no. Tolerance + - ° : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/720RS1131-1st speed rpm: 1300 : 0 413 406 165 EP type number Rack travel in mm : 15.60...15.70 Governor : RSV350...1300MW0A342 Governor design. Del.quantity cm3/: 12.0...12.2 : 0 420 085 157 Governer no. 100 s: (11.8...12.4) Customer-spec. information cm3 : 0.3Customer : MB-NFZ Spread Engine : OM 366 LA 100 s: (0.6) 2nd speed rpm : 350.0 Rack travel in mm : 7.0...7.5 : 177.0 1st version kW Rated speed : 2600 Del.quantity cm3/: 1.0...1.2 TEST BENCH REQUIREMENTS 100 s: (0.6...1.5) cm3 : 0.3Spread Test oil 100 s: (0.5) inlet temp. °C : 38...42 GUIDE SLEEVE POSITION Overflow valve Control-Lever position Degree: -3
Speed rpm: 800
Rack travel in mm: 0.30...1.00 : 1 417 413 047 Inlet press., bar: 1.50 FULL LOAD DELIV. AT FULL LOAD STOP Test nozzle holder : 0 681 343 009 assembly 1st version Opening Speed : 172...175 pressure, bar Del.quantity Test lines : 1 680 750 015 Spread cm3 Outside diameter x Wall thickness RATED SPEED : 6.00x1.50x600 x Length mm 1st version Control lever (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values Setting point:

rpm : 1300 Aneroid pressure h: 1000 : 120.0...122.0 1000 : (118.0...124.0) : 3.50 1000 : (6.00) position degrees: 103...111 Speed : 800 rpm Rack travel in mm: 0.6 Testing: 1st rack travel in: 14.6

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

rpm : 1340...1345 \* Speed 2nd rack travel in: 4.00 : 1432...1445 Speed rpm 3rd rack travel in: 4.00 : 1460...1490 Speed rpm 4th rack travel in: 1600 Speed rpm : 0.30...1.70 5th rack travel in: 1340...1350 rpm : 14.60 Speed LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 7.2

Testina:

Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 350
Rack travel in mm : 7.00...7.50
Rack travel in mm : 2.00 Speed rpm : 430...490

Aneroid/Altitude Compensator Test

1st version Setting

rpm : 500 hPa : 270 Speed rpm Pressure

Rack travel mm : 12.60...12.70

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 10.70...10.80 2nd pressure hPa : 500 Rack travel in m: 14.30...14.60 3rd pressure hPa : 1000

Rack travel in m: 15.60...15.70

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 600
Del.quantity cm3/: 109.0...111.0
1000 s: (106.5...114.5)

Spread cm3 : 5.00

1000 s: (7.0)

Aneroid pressure h: -Speed : 500 rpm

Del.quantity cm3/: 31.0...33.0 1000 s: (29.0...35.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 14.60 Speed rpm : 1340...1345

STARTING FUEL DELIVERY

Speed : 100 rpm Del.quantity cm3/: 100.0...110.0 1000 s: (97.0...113.0)

LOW IDLE

Speed rpm : 350
Rack travel in mm : 7.00...7.50
Del.quantity cm3/: 10.0...12.0
1000 s: (6.5...15.5) Spread cm3 : 3.501000 s: (5.50)

Remarks:

\* Read off speed set under 1. Add 92...100 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

Test hydr. locking device for starting with 500...1000 hPa air pressure.

Check pneumatic shutoff device at 3.0 bar air pressure

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 3.20...3.30 : (3.15...3.35) Rack travel in mm : 14.00...16.00 Note remarks : 1-5-3-6-2-4 Firing order : MAN 5,6 Q Test sheet Edition : 19.03.91 Replaces Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 0 403 476 099 Tolerance + - ° : 0.50 (0.75) Injection pump BASIC SETTING Pump designation : PES6MW100/320RS1209 : 0 413 406 200 EP type number rpm: 700 1st speed Governor Governor design. : RSV300...750MW1A802 Rack travel in mm : 14.50...14.60 Governer no. : 0 420 085 113 Del.quantity cm3/: 14.3...14.5 Customer-spec. information : MAN 100 s: (14.1...14.7) Customer : D0826LF20 Engine Spread cm3 : 0.31st version kW : 116.0 100 s: (0.6) Rated speed : 1500 rpm : 300.02nd speed TEST BENCH REQUIREMENTS Rack travel in mm: 6.6...7.4 Del.quantity cm3/: 3.4...3.8 100 s: (3.1...4.0) Test oil inlet temp. °C : 38...42 cm3 : 0.6Spread 100 s: (0.9) Overflow valve : 1 417 413 047 GUIDE SLEEVE POSITION Control-lever position Inlet press., bar: 1.50 Degree: -3 rpm : 800 Speed Test nozzle holder Rack travel in mm : 0.30...1.00 : 1 681 901 101 assembly FULL LOAD DELIV. AT FULL LOAD STOP Opening : 207...210 pressure, bar 1st version Speed rpm : 700 : 143.0...145.0 Orifice plate Del.quantity 1000 : (141.0...147.0) diameter mm : 0.6 : 3.50 cm3 Spread 1000 : (6.00) Test lines : 1 680 750 008 RATED SPEED

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY Test pressure, bar: 30...32 Speed : 800 rpm Rack travel in mm: 0.6 Testing:

position degrees: 34...42

1st version

Control Lever

Setting point:

1st rack travel in: 10.80 rpm : 750...755 Speed

2nd rack travel in: 4.00 rpm : 777...790 Speed 4th rack travel in: 950 Speed rpm : 0.30...1.70 LOW IDLE 1 Control lever position degrees: 14...22 Setting point w/out bumper spring

Speed rpm: 300
Rack travel in mm: 7.0
Speed rpm: 300
Rack travel in mm: 6.60...7.40
Rack travel in mm: 2.00
Speed rpm: 310...370

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.80 Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 110.0...130.0 1000 s: (107.0...133.0)

HIGH IDLE

1st version

Speed rom Rack travel in mm: 4.00

LOW IDLE

Speed rpm : 300 Rack travel in mm : 6.60...7.40 Del.quantity cm3/ : 34.0...38.0 1000 s: (31.5...40.5)

cm3 : 6.00

Spread 1000 s: (9.00)

Remarks:

: MAN #3-7111

Start-of-delivery mark is at start of delivery of cylinder 1

\* Read off speed set under 1. Add 27...35 min-1 to this speed. The control-rod travel under 2. must be

attained with the calculated speed

K25

Note remarks

Test sheet : MB 6,1 B 2 : 27.02.91 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 403 476 100

Injection pump

Pump designation : PES6MW100/720RS1131-

: 0 413 406 165 EP type number

Governor

: RSV350...1300MW0A342 Governor design.

: 0 420 085 162 Governer no.

Customer-spec. information Customer : MB-NFZ

: 0M 366 LA Engine

1st version kW : 157.0 : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina .

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.60...3.70 : (3.55...3.75) Prestroke mm

Rack travel in mm : 9.00...12.00 : 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm: 13.20...13.30

Del.quantity cm3/: 10.2...10.4

100 s: (10.0...10.6)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 7.0...7.5 Del.quantity cm3/: 1.0...1.2

100 s: (0.6...1.5)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -3
Speed rpm : 800
Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 3.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed Aneroid pressure h: 1000

: 102.0...104.0 Del.quantity

1000 : (100.0...106.0) cm3 : 3.50

Spread

1000 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 95...103

Setting point:

Speed rpm : 800 Rack travel in mm : 0.6

Testing: 1st rack travel in: 12.20 rpm : 1340...1345 \* Speed 2nd rack travel in: 4.00 rpm : 1390...1403 Speed 3rd rack travel in: 4.00 Speed rpm : 1420...1450 4th rack travel in: 1550 Speed rpm : 0.30...1.70 5th rack travel in: 1340...1350 rpm : 12.20 Speed LOW IDLE 1 Control lever position degrees: 66...74 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm: 7.2 Testing: Speed rpm : 100 Minimum rack trave: 19.00 rpm : 350 Speed Rack travel in mm : 7.00...7.50 Rack travel in mm : 2.00 : 480...540 Speed man Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rpm Pressure hPa : 190 Rack travel mm : 11.00...11.10 Measurement  $1/\min : 500$ Speed 1st pressure hPa : -Rack travel in m: 10.00...10.10 2nd pressure hPa : 350 Rack travel in m: 12.40...12.70 3rd pressure hPa : 1000 Rack travel in m: 13.20...13.30 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 Speed rpm : 600
Del.quantity cm3/: 89.0...92.0
1000 s: (86.5...94.5)
Spread cm3 : 5.00
1000 s: (7.0)

Del.quantity cm3/: 36.0...38.0 1000 s: (34.0...40.0)

# BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 12.20 Speed rpm : 1340...1345

# STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 100.0...110.0 1000 s: (97.0...113.0)

### LOW IDLE

#### Remarks:

\* Read off speed set under 1. Add 50...58 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

Test hydr. locking device for starting with 500...1000 hPa air pressure.

Check pneumatic shutoff device at 3.0 bar air pressure

Speed

Aneroid pressure h: -

rpm : 500

Note remarks

: MB 6,1 B 3 : 27.02.91 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 403 476 101

Injection pump

Pump designation : PES6MW100/720RS1131-

EP type number : 0 413 406 165

Governor

Governor design. : RSV350...1300Mw0A342

: 0 420 085 163 Governer no.

Customer-spec. information Customer : MB-NFZ

: 0M 366 LA Engine

1st version kW : 125.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 30...32

: 3.60...3.70 Prestroke mm

: (3.55...3.75)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 11.30...11.40

Del.quantity cm3/: 7.7...7.9

100 s: (7.5...8.1)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 7.0...7.5 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm: 0.30...1.00

Governor spring pre-tension Click setting x : 5.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 1000

Anerota production : 77.0...(7.0 pel.quantity : 77.0...(7.0 cm3 : 3.50 cm3 : 3.50 cm3 : (6.00)

RATED SPEED

1st version Control lever

position degrees: 103...111

Setting point:

Speed rpm Rack travel in mm: 0.6

Testing: 1st rack travel in: 10.30 Speed rpm : 1340...1345 \* 2nd rack travel in: 4.00 rpm : 1390...1403 Speed 3rd rack travel in: 4.00 Speed rpm : 1440...1470 4th rack travel in: 1550 rpm : 0.30...1.70 Speed 5th rack travel in: 1340...1350 rpm : 10.30Speed LOW IDLE 1 Setting point w/out bumper spring rpm : 350 Speed Rack travel in mm: 7.2 Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 350 Rack travel in mm : 7.00...7.50 Rack travel in mm : 2.00 : 480...540 Speed rpm TORQUE CONTROL Dimension a mm : 0.90 Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 11.30...11.40 nd speed rpm : 800 Rack travel in m: 11.60...11.80 2nd speed 3rd speed rpm : 600 Rack travel in m: 12.20...12.30 Aneroid/Altitude Compensator Test 1st version Setting Speed man : 500 Pressure hPa : 190 Rack travel mm : 11.00...11.10 Measurement 1/min: 500 Speed 1st pressure hPa : Rack travel in m: 10.60...10.70
2nd pressure hPa : 300
Rack travel in m: 11.70...12.00 3rd pressure hPa : 1000 Rack travel in m: 12.30...12.40 FUEL DELIVERY CHARACTERISTICS

Aneroid pressure h: 1000 Speed man Del.quantity cm3/: 71.0...74.0 1000 s: (68.5...76.5) Spread cm3 : 5.00 1000 s: (7.0) Aneroid pressure h: 1000 rpm Del.quantity cm3/: 64.0...67.0 1000 s: (61.5...69.5) Aneroid pressure h: rpm : 500 Speed Del.quantity cm3/: 36.0...38.0 1000 s: (34.0...40.0) **BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 10.30 rpm : 1340...1345 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 83.0...93.0 1000 s: (80.0...96.0)

LOW IDLE

Speed rpm : 350 Rack travel in mm : 7.00...7.50 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

\* Read off speed set under 1. Add 50...58 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

Test hydr. locking device for starting with 500...1000 hPa air pressure.

Check pneumatic shutoff device at 3.0 bar air pressure

1st version

L01

Note remarks

Test sheet Edition

: MB 6,1 D 5 : 22.03.91

Replaces

: ISO-4113 Test oil

Combination no. : 0 403 476 103

Injection pump

Pump designation : PES6MW100/720RS1131

EP type number : 0 413 406 123

Governor

Governor design. : RSV350...1200Mw0A342

-6

: 0 420 085 169 Governer no.

Customer-spec. information Customer : MB-NFZ

Engine : 0M 366 A

: 92.0 1st version kW Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.70...3.80 Prestroke mm

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rom: 1200 1st speed

Rack travel in mm : 10.10...10.20

Del.quantity cm3/: 6.4...6.6

100 s: (6.2...6.8)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.02nd speed Rack travel in mm : 6.2...6.9 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5) cm3 : 0.3 100 s: (0.5)

Spread

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1200 Speed Aneroid pressure h: 750

Del.quantity : 64.0...66.0 1000 : (62.0...68.0)

: 3.50 cm3

Spread 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Setting point:

Speed : 800 rpm Rack travel in mm : 0.6

Testing:

1st rack travel in: 9.10 rpm : 1235...1240 \* Speed 2nd rack travel in: 4.00 : 1270...1283 Speed rpm 3rd rack travel in: 4.00 rpm : 1300...1330 Speed 4th rack travel in: 1450 rpm : 0.30...1.70 Speed 5th rack travel in: 1245...1265 Speed rpm : 9.10 LOW IDLE 1 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 6.5 Testing: Speed rpm : 100 Minimum rack trave: 19.00 : 350 mom Rack travel in mm : 6.20...6.90 Rack travel in mm : 2.00 : 440...500 Speed rom TORQUE CONTROL Torque control curve - 1st version rpm : 1200 1st speed Rack travel in m: 10.10...10.20 : 600 2nd speed rpm Rack travel in m: 10.70...10.80 3rd speed rpm : 1000 Rack travel in m: 10.40...10.60 Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom Rack travel mm : 10.30...10.40 Measurement Speed 1/min: 500 1st pressure hPa : 180 Rack travel in m: 10.50...10.70 3rd pressure hPa : 750 Rack travel in m: 10.70...10.80 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 750 : 600 Speed rpm Del.quantity cm3/ : 58.0...61.0 1000 s: (55.5...63.5)

Aneroid pressure h: -Speed rpm Del.quantity cm3/: 47.0...49.0 1000 s: (45.0...51.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.10 rpm : 1235...1240 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 83.0...93.0 1000 s: (80.0...96.0) LOW IDLE rpm : 350 Speed Rack travel in mm : 6.20...6.90 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks: \* Read off speed set under 1. Add 35...43 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile. Test hydr. Locking device for starting with 500...1000 hPa air pressure. Check pneumatic shutoff device at 3.0 bar air pressure

cm3 : 5.00

1000 s: (7.0)

Spread

Note remarks

Test sheet : MB 6,1 D 6 Edition : 22.03.91

Replaces

Test oil : ISO-4113

Combination no. : 0 403 476 104

Injection pump

Pump designation : PES6MW100/720RS1131

EP type number : 0 413 406 123

Governor

Governor design. : RSV350...1200MW0A342

Governer no. : 0 420 085 170

Customer-spec. information : MB-NF7 Customer

Engine : 0M 366 A

: 100.0 1st version kW : 2400 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1200 1st speed

Rack travel in mm : 10.50...10.60

Del.quantity cm3/: 7.4...7.6

100 s: (7.2...7.8)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 350.02nd speed Rack travel in mm: 6.2...6.9

Del.quantity cm3/: 0.9...1.3 100 s: (0.6...1.5)

cm3 : 0.3Spread

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1200 Aneroid pressure h: 750

Del.quantity : (4.0...78.0)

: 3.50 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Setting point:

Speed rpm Rack travel in mm: 0.6

Testing:

L04

1st rack travel in: 9.50 rpm : 1240...1245 \* Speed 2nd rack travel in: 4.00 : 1280...1293 Speed COM 3rd rack travel in: 4.00 : 1300...1330 Speed rom 4th rack travel in: 1450 Speed rpm : 0.30...1.70 5th rack travel in: 1240...1255 rpm : 9.50 Speed LOW IDLE 1 Setting point w/out bumper spring rpm Rack travel in mm: 6.5 Testing: rpm : 100 Speed Minimum rack trave: 19.00 Speed rpm : 350
Rack travel in mm : 6.20...6.90
Rack travel in mm : 2.00 : 450...530 Speed rpm TORQUE CONTROL Torque control curve - 1st version rpm : 1200 1st speed Rack travel in m: 10.50...10.60 nd speed rpm : 600 Rack travel in m: 11.30...11.40 2nd speed 3rd speed rpm : 1000 Rack travel in m: 10.90...11.10 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 500 hPa : 250 : 500 Pressure Rack travel mm : 10.60...10.80 Measurement Speed 1/min: 500 1st pressure hPa : -Rack travel in m: 10.30...10.40 2nd pressure hPa : 300 Rack travel in m: 10.90...11.10 3rd pressure hPa : 750 Rack travel in m: 11.30...11.40 FUEL DELIVERY CHARACTERISTICS 1st version

Del.quantity cm3/: 67.0...70.0 1000 s: (64.5...72.5) cm3 : 5.00 Spread 1000 s: (7.0) Aneroid pressure h: -Speed rpm : 500
Del.quantity cm3/: 47.0...49.0
1000 s: (45.0...51.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.50 rpm : 1240...1245 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 83.0...93.0 1000 s: (80.0...96.0)

LOW IDLE

rpm : 350 Speed Rack travel in mm : 6.20...6.90 Del.quantity cm3/: 9.0...13.0 1000 s: (6.5...15.5) cm3 : 3.50 Spread 1600 s: (5.50)

Remarks:

\* Read off speed set under 1. Add 40...48 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

Test hydr. locking device for starting with 500...1000 hPa air pressure.

Check pneumatic shutoff device at 3.0 bar air pressure

Speed

Aneroid pressure h: 750

rom

Note remarks

Test sheet : MB 6,1 D 7 : 22.03.91 Edition

Replaces

: ISO-4113 Test oil

Combination no. : 0 403 476 105

Injection pump

Pump designation : PES6MW100/720RS1131

: 0 413 406 123 EP type number

Governor

Governor design. : RSV350...1200Mw0A342

-8

: 0 420 085 171 Governer no.

Customer-spec. information Customer : MB-NF

Engine : OM 366 A

: 114.0 1st version kW Rated speed : 2400

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

: 1 680 750 015 Test Lines

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm : 1200

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 8.4...8.6

100 s: (8.2...8.8)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 350.02nd speed Rack travel in mm: 6.2...6.9 Del.quantity cm3/: 0.9...1.3

100 s: (0.6...1.5)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

િવree: -3 m:: 800

Speed Rack travel ... mm : 0.30...1.00

Governor spring pre-tension Click setting x : 5.75

FULL LOAD DELIY. AT FULL LOAD STOP

1st version

Speed rpm : 1200 Aneroid pressure h: 750

Del.quantity : 84.0...86.0 1000 : (82.0...88.0)

cm3 : 3.50

Spread 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Setting point:

Speed : 800 rpm Rack travel in mm: 0.6

Testing:

1st rack travel in: 9.90 rpm : 1240...1245 Speed 2nd rack travel in: 4.00 Speed rpm: 1285...1298 3rd rack travel in: 4.00 Speed rpm : 1325...1355 4th rack travel in: 1450 rpm : 0.30...1.70 Speed 5th rack travel in: 1240...1255 rpm : 9.90 Speed LOW IDLE 1 Setting point w/out bumper spring rom Rack travel in mm: 6.5 Testing: Speed rpm : 100 Minimum rack trave: 19.00 Speed rpm : 350 Rack travel in mm : 6.20...6.90 Rack travel in mm: 2.00 Speed : 420...500 rom TORQUE CONTROL Torque control curve - 1st version rpm : 1200 1st speed Rack travel in m: 10.90...11.00 2nd speed rpm : 600 Rack travel in m: 11.70...11.80 of speed rpm : 1600 Rack travel in m: 11.00...11.20 3rd speed Aneroid/Altitude Compensator Test 1st version Setting rpm : 500 hPa : 300 Speed rom Pressure : 10.70...10.90 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.30...10.40 2nd pressure hPa : 400 Rack travel in m: 11.30...11.50 3rd pressure hPa : 750 Rack travel in m: 11.70...11.80 FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 78.0...81.0 1000 s: (75.5...83.5) Spread cm3 : 5.00 1000 s: (7.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 47.0...49.0 1000 s: (45.0...51.0)

#### **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 9.90 Speed rpm : 1240...1245

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 83.0...93.0 1000 s: (80.0...96.0)

# LOW IDLE

Speed rpm : 350
Rack travel in mm : 6.20...6.90
Del.quantity cm3/ : 9.0...13.0
1000 s: (6.5...15.5)
Spread cm3 : 3.50
1000 s: (5.50)

# Remarks:

\* Read off speed set under 1. Add 45...53 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

Test hydr. locking device for starting with 500...1000 hPa air pressure.

Check pneumatic shutoff device at 3.0 bar air pressure

Speed

1st version

Aneroid pressure h: 750

rpm : 600

: 3.25...3.35 BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : (3.20...3.40) Rack travel in mm : 9.00...12.00 Note remarks : 1-5-3-6-2-4 Firing order : IHC 7,7 B : 19.03.91 Test sheet Edition Replaces Test oil : ISO-4113 Phasing Combination no. : 0 403 476 106 Tolerance + - ° Injection pump BASIC SETTING Pump designation : PES6MW100/320RS1213 EP type number : 0 413 406 203 1st speed Governor Governor design. : RSV350...750MW7A345 : 0 420 085 168 Governer no. Customer-spec. information : NAVISTAR Customer : DT-466 Engine Spread 1st version kW : 159.0 Rated speed : 1500 2nd speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Spread Overflow valve : 2 417 413 038 GUIDE SLEEVE POSITION Inlet press., bar: 2.80 Test nozzle holder : 1 688 901 101 assembly Opening. pressure, bar : 207...210 Orifice plate diameter mm : 0,6 1st version Speed Del.quantity Test Lines : 1 680 750 008 Spread cm3 1000 Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 RATED SPEED (A) Injection pump setting values 1st version Insp. values in parentheses Control lever Set equal delivery quant. per values

: 0-60-120-180-240-300 : 0.50 (0.75) rpm : 700Rack travel in mm : 14.20...14.30 Del.quantity cm3/: 16.2...16.4 100 s: (16.0...16.6) cm3 : 0.3100 s: (0.6) rpm : 350.0 Rack travel in mm: 4.9...5.1 Del.quantity cm3/: 0.8...1.2 100 s: (0.5...1.4) cm3 : 0.3100 s: (0.5) Control-lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...1.00 Governor spring pre-tension Click setting x : 5.00FULL LOAD DELIV. AT FULL LOAD STOP rpm : 700 : 162.5...164.5 1000 : (160.5...166.5) : 3.50 : (6.00) position degrees: 90...98 Setting point: Speed rpm Rack travel in mm: 0.6

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Testing:

1st rack travel in: 13.20 rpm : 750...760 Speed

2nd rack travel in: 4.00 Speed rpm: 795...805 3rd rack travel in: 4.00

Speed rpm : 800...810 4th rack travel in: 850

Speed rpm : 0.30...1.70

LOW IDLE 1 Control Lever

position degrees: 68...76

Setting point w/out bumper spring

Speed rpm : 350 Rack travel in mm : 5.0

Testina:

Speed rpm : 100 Minimum rack trave: 19.00 rpm : 350

Rack travel in mm : 4.90...5.10

SET IDLE AUXILIARY SPRING Rack travel in mm: 4.00

# **BREAKAWAY**

1st version 1mm rack travel less than

full load rack tr: 13.20 rpm : 750...760 Speed

# STARTING FUEL DELIVERY

rpm : 100

Del.quantity cm3/: 160.0...180.0

1000 s: (155.0...185.0)

Rack travel in mm : 19.00...21.00

# LOW IDLE

Speed rpm : 350 Rack travel in mm : 4.90...5.10 Del.quantity cm3/: 8.0...12.0

1000 s: (5.5...14.5)

cm3 : 3.50 Spread

1000 s: (5.00)

Remarks:

Note remarks

: MB 6,1 D 8 : 28.03.91 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 403 476 107

Injection pump

Pump designation : PES6MW100/720RS1131

EP type number : 0 413 406 123

Governor

Governor design. : RSV350...1300Mv0A342

: 0 420 085 172 Governer no.

Customer-spec. information Customer : MB-NFZ

: OM 366 A Engine

1st version kW : 122.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

Prestroke mm : 3.70...3.80

: (3.65...3.85)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 10.90...11.00

Del.quantity cm3/: 8.4...8.6

100 s: (8.2...8.8)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 350.0 2nd speed Rack travel in mm: 6.2...6.9

Del.quantity cm3/: 0.9...1.3 100 s: (0.6...1.5)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position Degree: -3

rpm : 800 Speed Rack travel in mm : 0.30...1.00

Governor spring pre-tension

Click setting x : 5.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed Aneroid pressure h: 750

Del.quantity : 84.0...88.0)

: 3.50 Spread cm3 1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 100...108

Setting point:

Speed : 800 rpm Rack travel in mm: 0.6

Testing:

L10

1st rack travel in: 9.90 Speed rpm : 1340...1345 \* 2nd rack travel in: 4.00 rpm : 1380...1393 Speed 3rd rack travel in: 4.00 : 1400...1430 Speed rom 4th rack travel in: 1550 Speed : 0.30...1.70 rpm 5th rack travel in: 1345...1360 Speed rpm : 9.90 LOW IDLE 1 Setting point w/out bumper spring rpm : 350 Rack travel in mm: 6.5 Testing: rpm : 100 Speed Minimum rack trave: 19.00 mgn : 350 Rack travel in mm : 6.20...6.90 Rack travel in mm: 2.00 rpm : 420...500 Speed TORQUE CONTROL Torque control curve - 1st version rpm : 1300 1st speed Rack travel in m: 10.90...11.00 : 600 2nd speed rpm Rack travel in m: 11.70...11.80 3rd speed rpm : 1100 Rack travel in m: 11.00...11.20 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 rpm Pressure hPa : 300 Rack travel mm : 10.70...10.90 Measurement 1/min: 500 Speed 1st pressure hPa : -Rack travel in m: 10.30...10.40 2nd pressure hPa : 400 Rack travel in m: 11.30...11.50 3rd pressure hPa : 750 Rack travel in m: 11.70...11.80 FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 78.0...81.0 1000 s: (75.5...83.5) Spread cm3 : 5.00 1000 s: (7.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/: 47.0...49.0 1000 s: (45.0...51.0)

#### **BREAKAWAY**

ist version 1mm rack travel less than

full load rack tr: 9.90 Speed rpm : 1340...1345

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 83.0...93.0 1000 s: (80.0...96.0)

#### LOW IDLE

#### Remarks:

\* Read off speed set under 1. Add 40...48 min-1 to this speed. The control-rod travel under 2. must be attained with the calculated speed profile.

Test hydr. locking device for starting with 500...1000 hPa air pressure.

Check pneumatic shutoff device at 3.0 bar air pressure

Speed

1st version

Aneroid pressure h: 750

rpm : 600

Note remarks

: MAN 7,3 B 1 : 19.03.91 Test sheet Edition Replaces : 16.01.91 Test oil : ISO-4113

Combination no. : 0 403 486 104

Injection pump

Pump designation : PES6MW100/321RS1208

EP type number : 0 413 406 199

Governor

: RSV300...1100MW0A339 Governor design.

: 0 420 085 165 Governer no.

Customer-spec. information Customer

: DO826LFD10 Engine

1st version kW : 165.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 30...32

: 3.50...3.60 Prestroke mm

: (3.45...3.65)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 14.00...14.10

Del.guantity cm3/: 13.5...13.7

100 s: (13.3...13.9)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0Rack travel in mm: 5.3...5.5 Del.quantity cm3/: 1.1...1.5

100 s: (0.8...1.7)

cm3 : 0.3 Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rom : 1100 Aneroid pressure h: 1000

Del.quantity : 133.0...139.0)

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 90...98

Setting point:

Speed rpm : 800 Rack travel in mm: 0.6

Testing:

1st rack travel in: 13.00 rpm : 1150...1160 Speed 2nd rack travel in: 4.00 rpm : 1230...1260 Speed 4th rack travel in: 1400 Speed rpm : 0.30...1.70 LOW IDLE 1 Control lever position degrees: 70...78 Setting point w/out bumper spring : 300 rpm Rack travel in mm: 5.4 Testing: rpm : 100 Speed Minimum rack trave: 19.00 rpm : 300 Speed Rack travel in mm : 5.30...5.50 SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00 Aneroid/Altitude Compensator Test 1st version Setting Speed : 500 LICHI I Pressure hPa : -Rack travel mm : 11.20...11.30 Measurement 1/min : 500Speed 1st pressure hPa : 170 Rack travel in m: 11.50...11.60 2nd pressure hPa : 400 Rack travel in m: 12.40...12.70 3rd pressure hPa : 1000 Rack travel in a: 14.00...14.10 FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 600 Del.quantity cm3/: 135.5...138.5 1000 s: (133.0...141.0) cm3 : 5.00Spread 1000 s: (7.0) Aneroid pressure h: 1000 Speed rpm : 800 Del.quantity cm3/: 139.0...142.0 1000 s: (136.5...144.5) Del.quantity cm3/: 74.0...76.0 1000 s: (72.0...78.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 13.00 rpm : 1150...1160 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 130.0...150.0 1000 s: (127.0...153.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 5.30...5.50 Del.quantity cm3/: 11.0...15.0 1000 s: (8.5...17.5) cm3 : 3.50 Spread 1000 s: (5.50) Remarks: delivery of cylinder 1

: MAN #3-7102 Start-of-delivery mark is at start of

Speed

Aneroid pressure h: -

rpm : 500

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks : MB 4,0 h : 09.04.91 Test sheet Edition Replaces : 24.10.90 Test oil : ISO-4113 Combination no. : 9 400 085 307 Injection pump Pump designation : PES4A95D410RS2774 EP type number : 9 400 084 019 Governor Governor design. : RQV300...1300AB1228-: 9 420 080 268 Governer no. Customer-spec. information Customer : MERCEDES-BENZ : OM 364 A Engine 1st version kW : 85.0 Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 006 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening | pressure, bar : 172...175 Test lines : 1 680 750 015 Outside diameter x Wall thickness x Length mm : 6.00x1.50x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY

Rack travel in mm : 9.00...12.00 : 1-3-4-2 Firing order Phasing : 0-90-180-270 Tolerance + - ° : 0.50 (0.75)Time to cyl. no. : 1 BASIC SETTING 1st speed rpm: 1300 Rack travel in mm : 10.60...10.70 Del.quantity cm3/: 9.0...9.2 100 s: (8.8...9.4) Spread cm3 : 0.3100 s: (0.6) rpm : 300.0 2nd speed Rack travel in mm: 6.9...7.1 Del.quantity cm3/: 0.6...1.2 100 s: (0.4...1.4) cm3 : 0.3 Spread 100 s: (0.5) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed 300 travel mm 0.80...1.30 rpm : 500 2nd speed 2.30...2.80 travel mm 3rd speed : 750 rpm : 4.10...4.30 travel mm : 1500 4th speed rpm : 8.50...8.60 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 Speed rpm : 1500 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1300 Aneroid pressure h: 700 : 90.0...92.0 Del.quantity 1000 : (88.0...94.0) : 3.50 Spread cm3

1000 : (6.00)

Prestroke mm

Test pressure, bar: 25...27

: 3.20...3.30

: (3.15...3.45)

RATED SPEED

1st version Control lever

position degrees: 107...115

Testina:

1st rack travel in: 9.60

rpm : 1360...1370 Speed

2nd rack travel in: 4.00

Speed rpm: 1490...1520 4th rack travel in: 1640

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 62...70

Testina:

rpm : 100 Speed Minimum rack trave: 8.00

rpm : 300

Rack travel in mm : 6.90...7.10

CONSTANT REGULATION

rom : 420...550 Speed

TORQUE CONTROL

Dimension a mm : 0.40

Torque control curve - 1st version 1st speed rpm : 1300

Rack travel in m: 10.60...10.70

2nd speed rpm : 800 Rack travel in m: 11.00...11.10 4th speed rpm : 1000

Rack travel in m: 10.80...11.00

Aneroid/Altitude Compensator Test

1st version Setting

rpm : 500 hPa : 700 Speed rpm Pressure

Rack travel mm : 11.00...11.10

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.80...10.00

2nd pressure hPa : 410
Rack travel in m: 10.80...10.90
3rd pressure hPa : 310
Rack travel in m: 10.10...10.30

START CUT-OUT

1/min : 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 Speed rpm : 800

Del.quantity cm3/: 84.5...87.5 1000 s: (82.0...90.0) Aneroid pressure h: 700

Speed rpm : 1000 Del.quantity cm3/: 87.5...90.5 1000 s: (85.0...93.0)

Aneroid pressure h: rpm : 500 Speed

Del.quantity cm3/: 61.0...63.0 1000 s: (59.0...65.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.60

Speed rpm : 1360...1370

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 78.0...90.0

1000 s: (-)

Rack travel in mm : 12.90...13.10

Remarks:

L15

#### Note remarks

Test sheet : MB 6,0 k : 09.04.91 Edition Replaces : 16.1.91 Test oil : ISO-4113

Combination no. : 9 400 085 316

Injection pump

Pump designation : PES6A95D41ORS2795 EP type number : 9 400 084 020

Governor

Governor design. : RQV300...1400AB1065-

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: 9 420 080 278 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: OM 366 Engine

: 100.0 1st version kW Rated speed : 2800

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.20...3.30 Prestroke mm

: (3.15...3.35)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

#### BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 9.90...10.00

Del.guantity cm3/: 6.8...7.0

100 s: (6.6...7.2)

cm3 : 0.3Spread

100 s: (0.3)

2nd speed rpm : 300.0 Rack travel in mm : 7.8...8.0 Del.quantity cm3/: 0.8...1.4

100 s: (0.6...1.6)

cm3 : 0.3 Spread 100 s: (0.3)

# (B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1500 1st speed

: 8.50...8.60 travel mm

rpm : 300 2nd speed

travel mm : 0.80...1.30 rpm : 500 3rd speed

: 2.30...2.80 travel mm rpm : 750 4th speed

: 4.10...4.30 travel mm

# GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1420

Rack travel in mm : 15.20...17.80

## FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1400 Speed

: 68.5...70.5 Del.quantity 1000 : (66.5...72.5)

: 3.50 cm3 Spread

1000 : (3.50)

RATED SPEED

1st version Control Lever position degrees: 106...114 Testina: 1st rack travel in: 8.90 rpm : 1460...1470 Speed 2nd rack travel in: 4.00 Speed rpm : 1545...1575 4th rack travel in: 1680 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 66...74 Testing: Speed rpm : 100 Minimum rack trave: 8.00 Speed rpm Rack travel in mm : 7.80...8.00 CONSTANT REGULATION rpm : 480...630 Speed START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 600 Del.quantity cm3/: 50.0...53.0 1000 s: (47.5...55.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 8.90 Speed rpm : 1460...1470 STARTING FUEL DELIVERY : 100 rpm

Del.quantity cm3/: 78.0...90.0 1000 s: (75.0...93.0) Rack travel in mm: 14.00...14.20

:

Remarks:

L17

Note remarks

Test sheet : FOR 6,6 p 1 Edition : 09.04.91

Replaces

Test oil : ISO-4113

Combination no. : 9 400 085 326

Injection pump

Pump designation : PES6A95D410RS2802 : 9 400 084 025 EP type number

Governor

Governor design. : RQV350...1300AB1220-

: 9 420 080 308 Governer no.

Customer-spec. information : FORD (FNH) Customer

: 6.6 L - TC Engine

: 139.0 1st version kW Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Cyerflow valve

: 1 457 413 010

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina |

pressure, bar : 172...175

Test lines : 1 680 750 008

Outside diameter

x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.15...3.25

: (3.10...3.30)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...12.00

& maximum rack tra: 21.00 Difference \* CS : 2.00...3.00

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 10.1...10.3

100 s: (9.9...10.6)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm: 6.0...6.2

Del.quantity cm3/: 1.5...2.1 100 s: (1.3...2.2)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1450

: 8.50...8.60 travel mm

: 350 2nd speed rpm

travel mm : 1.10...1.80

3rd speed : 500 rpm

travel mm 2.70...3.10

: 700 4th speed rpm

3.50...3.90 travel mm

rpm : 1000 5th speed

: 4.90...5.30 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1540 Speed

Rack travel in mm : 6.70...9.30

FULL LOAD DELIV. AT FULL LOAD STOP

1st version Speed Del.quantity

rpm : 1300 Aneroid pressure h: 900

: 101.5...103.5 1000 : (99.0...106.0)

cm3 : 3.50 Spread 1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 111...119

Testing:

1st rack travel in: 12.20

Speed rpm : 1340...1350

2nd rack travel in: 4.00

rpm : 1490...1520 Speed

4th rack travel in: 1630

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 65...73

Testing:

Speed rpm : 100 Minimum rack trave: 9.00 rpm : 350

Rack travel in mm : 6.00...6.20

CONSTANT REGULATION

Speed : 370...440 rpm

Aneroid/Altitude Compensator Test

1st version Setting

: 500 Speed rom hPa : 900 Pressure

: 13.20...13.30 Rack travel mm

Measurement

 $1/\min: 500$ Speed

1st pressure hPa : -

Rack travel in m: 11.20...11.50

2nd pressure hPa : 410

Rack travel in m: 11.80...12.10

3rd pressure hPa : 510

Rack travel in m: 12.70...12.80

START CUT-OUT

1/min: 290 (310) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 900 : 800 Speed rpm

Del.quantity cm3/: 99.5...103.5 1000 s: (97.5...105.5)

Aneroid pressure h:

Speed rpm : 500 Del.quantity cm3/ : 76.5...78.5

1000 s: (74.0...81.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20

rpm : 1340...1350 Speed

STARTING FUEL DELIVERY

LOW IDLE

rpm : 350 Speed

Rack travel in mm : 6.00...6.20 Del.quantity cm3/: 15.0...21.0 1000 s: (13.5...22.5)

cm3: 3.50

1000 s: (5.50)

Remarks:

Spread

Set shutoff stop 1.5...2.0 mm before

shutoff.

Note remarks

: MB 6,0 g 5 Test sheet Edition : 09.04.91

Replaces

Test oil : ISO-4113

Combination no. : 9 400 085 329

Injection pump

Pump designation : PES6A95D41ORS2772 EP type number : 9 400 084 018

Governor

Governor design. : RQV300...1300AB1256L

: 9 420 080 297 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 366 LA

: 150.0 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 006

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 11.10...11.20

Del.quantity cm3/: 9.8...10.0

100 s: (9.6...10.2)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.0 2nd speed Rack travel in mm: 6.9...7.1 Del.quantity cm3/: 0.8...1.4

100 s: (0.6...1.6)

Spread cm3 : 0.3100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 0.80...1.30 travel mm 2nd speed : 500 rpm

: 2.30...2.80 travel mm

rpm : 750 3rd speed

travel mm : 4.10...4.30

rpm : 1500 4th speed

travel mm : 8.50...8.60

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1500

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed

Aneroid pressure h: 700 Del.quantity : 98.0...100.0

1000 : (96.0...102.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

L20

1st version Control Lever

position degrees: 114...122

Testina:

1st rack travel in: 10.10

rpm : 1360...1370

2nd rack travel in: 4.00

rpm : 1490...1520 Speed

4th rack travel in: 1650

rpm : 0.00...1.00 Speed

LOW IDLE 1

Control Lever

position degrees: 70...78

Testing:

Speed : 100 rpm Minimum rack trave: 8.00 rpm : 300 Speed

Rack travel in mm : 6.90...7.10

CONSTANT REGULATION

rpm : 420...550 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm hPa : 700 Pressure

Rack travel mm : 11.10...11.20

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 9.40...9.70

2nd pressure hPa : 450

Rack travel in m: 10.60...10.70

3rd pressure hPa : 300

Rack travel in m: 9.90...10.10

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 700 Del.quantity cm3/: 86.0...89.0 1000 s: (83.5...91.5)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 59.5...61.5

1000 s: (57.5...63.5)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.10

rpm : 1360...1370 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 78.0...90.0

1000 s: (-)

Rack travel in mm : 13.60...13.80

LOW IDLE

Speed rpm : 300 Rack travel in mm : 6.90...7.10 Del.quantity cm3/: 8.0...14.0 1000 s: (6.0...16.0) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Note remarks

Test sheet : MB 4,0 i
Edition : 09.04.91
Replaces : 16.1.91
Test oil : ISO-4113

Combination no. : 9 400 085 333

Injection pump

Pump designation : PES4A95D410RS2805 EP type number : 9 400 084 026

Governor

Governor design. : RQV300...1400AB1065-

21L

Governer no. : 9 420 080 303

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 364

1st version kW : 66.0 Rated speed : 2800

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.20...3.30

: (3.15...3.35)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance  $+ - \circ : 0.50 (0.75)$ 

BASIC SETTING

1st speed rpm: 1400

Rack travel in mm : 9.60...9.70

Del.quantity cm3/ : 7.0...7.2

100 s: (6.8...7.4)

Spread cm3 : 0.3

100 s: (0.3)

2nd speed rpm : 300.0 Rack travel in mm : 7.4...7.6 Del.quantity cm3/: 0.5...1.1

100 s: (0.3...1.3)

Spread cm3 : 0.3 100 s: (0.3)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1500

travel mm : 8.50...8.60

2nd speed rpm : 300 travel mm : 0.80

travel mm : 0.80...1.30 3rd speed rpm : 500

travel mm : 2.30...2.80

4th speed rpm: 750

travel mm : 4.10...4.30

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

Speed rpm : 1420

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1400

Del.quantity : 70.0...72.0

1000 : (68.0...74.0)

Spread cm3 : 3.50

1000 : (3.50)

RATED SPEED

1st version control lever position degrees: 106...114 Testing: 1st rack travel in: 8.60 rpm : 1460...1470 Speed 2nd rack travel in: 4.00 Speed rpm : 1540...1570 4th rack travel in: 1680 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 65...73 Testing: Speed rpm : 100 Minimum rack trave: 7.50 Speed rpm : 300 Rack travel in mm : 7.40...7.60 CONSTANT REGULATION rpm : 480...630 Speed START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Speed rpm : 700 Del.quantity cm3/: 54.5...57.5 1000 s: (52.0...60.0) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8.60 rpm : 1460...1470 Speed STARTING FUEL DELIVERY

Speed rpm : 100
Del.quantity cm3/: 78.0...90.0
1000 s: (75.0...93.0)
Rack travel in mm : 13.80...14.00

Remarks:

Note remarks

Test sheet : MB 6,1 h Edition : 09.04.91

Replaces

Test oil : ISO-4113

Combination no. : 9 400 085 340

Injection pump

Pump designation : PES6A95D410RS2795 : 9 400 084 020 EP type number

Governor

: RSV350...1250A0B1150 Governor design.

-5L

Governer no. : 9 420 083 249

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : OM 366

: 94.0 1st version kW Rated speed : 2500

TEST BENCH REQUIREMENTS

Test oil

inlet temp. "C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.20...3.30 : (3.15...3.35) Prestroke mm

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1300 1st speed

Rack travel in mm : 8.60...8.70

Del.quantity cm3/: 6.2...6.4

100 s: (6.0...6.6)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 350.0 2nd speed

Rack travel in mm: 6.9...7.1 Del.quantity cm3/: 0.9...1.5

100 s: (0.7...1.7)

Spread cm3 : 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed

Rack travel in mm: 0.30...1.00

Governor spring pre-tension

Click setting x : 5.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed

: 62.0...64.0 Del.quantity 1000 : (60.0...66.0) cm3 : 3.50

Spread

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 108...116

Testina:

1st rack travel in: 7.60 Speed rpm : 1340...1350

2nd rack travel in: 4.00

rpm : 1380...1410 Speed

4th rack travel in: 1550

Speed rpm : 0.30...1.70LOW IDLE 1 Control lever position degrees: 78...86 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm: 6.5 Testing: Speed rpm : 100 Minimum rack trave: 19.00
Speed rpm: 350
Rack travel in mm: 6.90...7.10
Rack travel in mm: 2.00 : 445...505 Speed rom TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1300 Rack travel in m: 8.60...8.70 2nd speed rpm : 500 Rack travel in m: 8.60...8.80 5th speed rpm : 400 Rack travel in m: 9.80...10.40 **BREAKAWAY** 1st version 18m rack travel less than full load rack tr: 7 0 Speed rpm : 13 )...1350 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 90.0...110.0 1000 s: (87.0...113.0) Rack travel in mm : 14.10...14.30 LOW IDLE rpm : 350 Speed Rack travel in mm : 6.90...7.10 Del.quantity cm3/: 9.0...15.0 1000 s: (7.0...17.0) Spread cm3 : 3.50 1000 s: (5.50) Remarks: APPLICATION

Combine-harvester

Note remarks

: MB 4,0 k : 09.04.91 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 9 400 085 341

Injection pump

Pump designation : PES4A95D410RS2805 EP type number : 9 400 084 026

Governor

: RSV350...1300A0B1150 Governor design.

-6L

: 9 420 083 250 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

Engine : OM 364

1st version kW : 60.0 : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 33...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening |

: 172...175 pressure, bar

: 1 680 750 015 Test lines

Outside diameter x Wall thickness

x Length mm

: 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.20...3.30 Prestroke mm

: (3.15...3.35)

Rack travel in mm : 9.00...12.00

: 1-3-4-2 Firing order

: 0-90-180-270 Phasina

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 9.40...9.50

Del.quantity cm3/: 5.8...6.0

100 s: (5.6...6.2)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 350.0 Rack travel in mm : 7.4...7.6

Del.quantity cm3/: 0.6...1.2 100 s: (0.4...1.4)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION

Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.75

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed

rpm : 1300 Speed

: 58.5...60.5 1000 : (56.5...62.5) Del.quantity

: 3.50

Spread cm3

1000 : (6.00)

RATED SPEED

1st version

Control lever

position degrees: 107...115

Testing:

1st rack travel in: 8.40 Speed rpm : 1340...1350 2nd rack travel in: 4.00

rpm : 1390...1420 Speed

4th rack travel in: 1550

rpm : 0.30...1.70 Speed LOW IDLE 1 Control lever position degrees: 78...86 Setting point w/out bumper spring Speed rpm : 350 Rack travel in mm : 7.0 Testing: rpm : 100 Speed Minimum rack trave: 19.00 Speed rpm : 350 Rack travel in mm : 7.40...7.60 Rack travel in mm : 2.00 rpm : 470...530 Speed TORQUE CONTROL Torque control curve - 1st version st speed rpm : 1300 Rack travel in m: 9.40...9.50 1st speed nd speed rpm : 500 Rack travel in m: 9.40...9.60 2nd speed rpm : 400 5th speed Rack travel in m: 10.60...11.20 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 8.40 rpm : 1340...1350 Speed STARTING FUEL DELIVERY rpm : 100 Speed Del.quantity cm3/: 88.0...100.0 1000 s: (85.0...103.0) Rack travel in mm : 14.80...15.00 LOW IDLE Speed rpm : 350 Rack travel in mm : 7.40...7.60

Del.quantity cm3/: 6.0...12.0 1000 s: (4.0...14.0) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

Note remarks

Test sheet : MB 11,6 c Edition : 09.04.91 Replaces : 10.85 Test oil : ISO-4113

Combination no. : 9 400 087 302

Injection pump

Pump designation: PE6P110A720RS476 : 9 40L 087 037 EP type number

Governor

Governor design: : RQ300/1000PA718 : 9 420 080 169 Governer no.

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 355/LA

1st version kW : 235.0 Rated speed : 2000

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 004

Outside diameter x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 3.35...3.45 : (3.30...3.50)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1000

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 19.1...19.3

100 s: (18.8...19.6)

Spread cm3 : 0.4

100 s: (0.7)

2nd speed rpm : 300.0 Rack travel in mm : 5.9...6.1 Del.quantity cm3/ : 0.7...1.3

100 s: (0.4...1.5)

Spread cm3 : 0.4100 s: (0.7)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm : 600

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed Aneroid pressure h: 700

: 191.0...193.0 Del.quantity

1000 : (188.0...196.0) Spread

cm3 : 4.00 1000 : (7.50)

RATED SPEED

1st version

Setting point:

Speed rpm : 600 Rack travel in mm : 20.0

Testing:

1st rack travel in: 12.20

Speed rpm : 1045...1060 2nd rack travel in: 4.00

rpm : 1100...1130 Speed

L28

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Setting point w/out bumper spring

rpm : 300 Rack travel in mm : 6.0

Testing:

Speed rpm : 100 Minimum rack trave: 8.00 rpm : 300 Speed

Rack travel in mm : 5.90...6.10

Rack travel in mm : 2.00 rpm : 405...455 Speed

Aneroid/Altitude Compensator Test

1st version

Setting Speed

: 500 rpm hPa : 700 Pressure

Rack travel mm : 13.20...13.30

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.50...9.80

2nd pressure hPa : 450

Rack travel in m: 12.20...12.30
3rd pressure hPa : 200
Rack travel in m: 10.30...10.60

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 Speed rpm : 600

Del.quantity cm3/: 184.0...188.0 1000 s: (181.0...191.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 104.5...107.5

1000 s: (102.0...110.0)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 12.20

MO1

rpm : 1045...1060 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 160.0...180.0

**1000** s: (156.0...184.0) Rack travel in mm : 13.30...14.30

Remarks:

Note remarks

: MB 11,6 d : 09.04.91 Test sheet Edition Replaces : 10.85 Test oil : ISO-4113

Combination no. : 9 400 087 320

Injection pump

Pump designation : PE6P110A720RS476 : 9 400 087 037 EP type number

Governor

Governor design. : RQV300...1000PA751

: 9 420 080 196 Governer no.

Customer-spec. information

: MERCEDES-SENZ Customer

: OM 355/LA Engine

1st version kW : 235.0 : 2000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Openina |

pressure, bar : 172...175

Test lines : 1 680 750 004

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 3.35...3.45 Prestroke mm : (3.30...3.50)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

rpm : 10001st speed

Rack travel in mm : 13.20...13.30

Del.quantity cm3/: 19.1...19.3

100 s: (18.8...19.6)

Spread cm3 : 0.4

100 s: (0.7)

rpm : 300.02nd speed Rack travel in mm: 5.9...6.1 Del.quantity cm3/: 0.7...1.3

100 s: (0.4...1.5)

cm3 : 0.4 100 s: (0.7) Spread

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 1025

: 8.50...8.60 travel mm 2nd speed rpm : 300

travel mm : 1.20...1.60

3rd speed rpm : 450

2.80...3.10 travel mm

rpm : 700 4th speed

: 4.90...5.20 travel mm

GUIDE SLEEVE POSITION

Control-lever position Degree: -1

rpm : 1025 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1000Aneroid pressure h: 700

Del.quantity : 191.0...(196.0)

: 4.00 Spread cm3

1000 : (7.50)

MO2

RATED SPEED

1st version Control lever

position degrees: 119...127

Testina:

1st rack travel in: 12.20

rpm : 1040...1050 Speed

2nd rack travel in: 4.00

rpm : 1115...1145 Speed

4th rack travel in: 1250

Speed rpm : 0.00...1.00

LOW IDLE 1

Control lever

position degrees: 68...76

Testing:

Speed : 100 morn

Minimum rack trave: 8.00 : 300 Speed rpm

Rack travel in mm : 5.90...6.10

CONSTANT REGULATION

rpm : 240...310 Speed

Aneroid/Altitude Compensator Test

1st version

Setting

rpm : 500 hPa : 700 Speed rom Pressure

Rack travel mm : 13.20...13.30

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 9.50...9.80

2nd pressure hPa : 450

Rack travel in m: 12.20...12.30

3rd pressure hPa : 200

Rack travel in m: 10.30...10.60

START CUT-OUT

1/min: 250 (270) Speed

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

: 600 Speed rpm

Del.quantity cm3/: 184.0...188.0

1000 s: (181.0...191.0)

Aneroid pressure h: -

MO3

Speed : 500 rpm

Del.quantity cm3/: 104.5...107.5 1000 s: (102.0...110.0)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 12.20

**rpm** : 1040...1050 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 160.0...180.0 1000 s: (156.0...184.0)

Rack travel in mm : 13.30...14.30

Remarks:

Note remarks

Test sheet : MB 6,0 i 3 Edition : 09.04.91

Replaces

Test oil : ISO-4113

Combination no. : 9 400 087 429

Injection pump

Pump designation : PES6P120A720RS3256-1

EP type number : 9 400 087 077

Governor

Governor design. : RQV300...1300PA963

: 9 420 080 283 Governer no.

Customer-spec. information

: MERCEDES-BENZ Customer

: OM 366 LA Engine

: 156.6 1st version kW : 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 019 assembly

**Opening** 

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x1000

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.30...4.40 Prestroke mm : (4.25...4.45)

Rack travel in mm : 9.00...12.00

: 6-2-4-1-5-3 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 12.90...13.00

Del.quantity cm3/: 15.7...15.9

100 s: (15.4...16.2)

Spread cm3 : 0.5

100 s: (0.9)

2nd speed rpm : 300.0Rack travel in mm: 8.6...8.9

Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9) cm3 : 0.8

100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

Spread

rpm : 300 1st speed

: 1.20...1.40 travel mm

rpm : 800 2nd speed

: 4.50...4.80 travel mm

rpm : 1350 3rd speed

travel mm : 8.20...8.60

: 1450 4th speed rpm

: 9.00...10.00 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1 rpm : 1350 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1300 Aneroid pressure h: 1000

Del.quantity : 157.0...159.0 1000 : (154.0...162.0)

cm3 : 5.00Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 112...120 Testing: 1st rack travel in: 11.90 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1420...1450 Speed 4th rack travel in: 1550 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 82...90 Testing: rpm : 200 Speed Minimum rack trave: 10.00 rpm : 300 Rack travel in mm : 8.60...8.90 CONSTANT REGULATION rpm : 300...450 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed וווסרו Pressure hPa : -: 10.60...10.90 Rack travel mm Measurement 1/min: 500 Speed 1st pressure hPa : 300 Rack travel in m: 11.10...11.30 2nd pressure hPa : 500 Rack travel in m: 12.10...12.30 3rd pressure hPa : 1000 Rack travel in m: 12.80...13.00 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version

Del.quantity cm3/: 142.0...146.0
1000 s: (139.0...149.0)

Spread cm3 : 8.00
1000 s: (12.0)

Aneroid pressure h: Speed rpm : 500
Del.quantity cm3/: 65.0...67.0
1000 s: (62.0...70.0)

Spread cm3 : 8.00
1000 s: (12.0)

BREAKAWAY

1st version
1mm rack travel less than
full load rack tr: 11.90

Speed rpm : 100 Del.quantity cm3/ : 100.0...120.0 1000 s: (96.0...124.0)

STARTING FUEL DELIVERY

rpm : 1340...1350

1000 s: (96.0...124.0)

Speed rpm : 300
Rack travel in mm : 8.60...8.90
Del.quantity cm3/ : 10.0...16.0
1000 s: (7.0...19.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

Speed

MO5

Speed

Aneroid pressure h: 1000

rpm : 800

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : MB 6,0 i 4 : 09.04.91 Edition Replaces Test oil : ISO-4113 Combination no. : 9 400 087 430 Injection pump Pump designation : PES6P120A720RS3256-1 EP type number : 9 400 087 077 Governor Governor design. : RQV300...1300PA963-1 : 9 420 080 284 Governer no. Customer-spec. information Customer : MERCEDES-BENZ : OM 366 LA Engine : 171.5 1st version kW Rated speed : 2600 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 025 Inlet press., bar: 1.50 Test nozzle holder assembly : 1 688 901 019 Openina . pressure, bar : 207...210 Orifice plate diameter mm : 0,8 Test lines : 1 680 750 067 Outside diameter x Wall thickness : 6.00x1.50x1000 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

: 4.30...4.40 : (4.25...4.45) Rack travel in mm : 9.00...12.00 : 6-2-4-1-5-3 Firing order Phasina : 0-60-120-180-240-300 Tolerance + - ° : 0.50 (0.75) Time to cyl. no. : 6 BASIC SETTING 1st speed rpm: 1300 Rack travel in mm : 13.90...14.00 Del.quantity cm3/: 18.0...18.2 100 s: (17.7...18.5) Spread cm3 : 0.5100 s: (0.9) rpm : 300.02nd speed Rack travel in mm: 8.6...8.9 Del.quantity cm3/: 1.0...1.6 100 s: (0.7...1.9) Spread cm3 : 0.8100 s: (1.2) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL 1st speed rpm : 300 travel mm : 1.20...1.40 2nd speed : 800 rpm : 4.50...4.80 travel mm 1350 3rd speed rpm : 8.20...8.60 travel mm : 1450 4th speed rom : 9.00...10.00 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1350 Speed Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1300 Aneroid pressure h: 1000 Del.quantity : 180.0...185.0)

Prestroke mm

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 5.00 cm3 Spread 1000 : (9.00) RATED SPEED 1st version Control lever position degrees: 112...120 Testing: 1st rack travel in: 12.90 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 Speed rpm: 1445...1475 4th rack travel in: 1550 rpm : 0.00...1.00 Speed LOW IDLE 1 Control lever position degrees: 82...90 Testina: Speed rpm : 200 Minimum rack trave: 10.00 Speed rpm : 300 Rack travel in mm : 3.60...8.90 CONSTANT REGULATION Speed rpm : 300...450 Aneroid/Altitude Compensator Test 1st version Settina : 500 Speed CDM Pressure hPa : -Rack travel mm : 10.60...10.90 Measurement Speed 1/min: 500 1st pressure hPa : 300 Rack travel in m: 11.10...11.30 2nd pressure hPa : 700 Rack travel in m: 13.00...13.20
3rd pressure hPa : 1000
Rack travel in m: 13.70...13.90 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 100.0...120.0 1000 s: (96.0...124.0)

rpm : 1340...1350

LOW IDLE

Speed

Speed rpm : 300
Rack travel in mm : 8.60...8.90
Del.quantity cm3/ : 10.0...16.0
1000 s: (7.0...19.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

**MO7** 

Speed

Aneroid pressure h: 1000

rpm : 800

BOSCH INJ. PUMP TEST SPECIFICATIONS Prestroke mm : 4.30...4.40 : (4.25...4.45) Rack travel in mm : 9.00...12.00 Firing order : 6-2-4-1-5-3 Note remarks : MB 6,0 i 2 : 09.04.91 Test sheet Edition Replaces : 24.10.90 Test oil : ISO-4113 Phasing : 0-60-120-180-240-300 Combination no. : 9 400 087 431 Tolerance + - ° : 0.50 (0.75) Injection pump Time to cyl. no. : 6 Pump designation : PES6P120A720RS3256 : 9 400 087 071 EP type number BASIC SETTING Governor Governor design. : RQV300...1300PA963-2 1st speed rpm : 1300: 9 420 080 285 Governer no. Rack travel in mm : 11.60...11.70 Customer-spec. information Customer : MERCEDES-BENZ Del.quantity cm3/: 13.4...13.6 : OM 366 LA 100 s: (13.1...13.9) Engine 1st version kW : 141.7 cm3 : 0.5Spread : 2600 Rated speed 100 s: (0.9) TEST BENCH REQUIREMENTS rpm : 300.02nd speed Test oil Rack travel in mm: 8.6...8.9 inlet temp. °C : 38...42 Del.quantity cm3/ : 1.0...1.6 100 s: (0.7...1.9) Overflow valve Spread cm3 : 0.8: 1 417 413 025 100 s: (1.2) Inlet press., bar: 1.50 (B) Setting of injection pump with governor Test nozzle holder : 1 688 901 019 assembly GUIDE SLEEVE TRAVEL 1st speed rpm : 300 : 1.20...1.40 **Openina** travel mm : 207...210 pressure, bar 2nd speed rpm : 800 : 4.50...4.80 travel mm Orifice plate : 1350 3rd speed rpm diameter mm : 0,8 : 8.20...8.60 travel mm rpm : 1450 4th speed : 9.00...10.00 travel mm Test lines : 1 680 750 067 GUIDE SLEEVE POSITION Outside diameter Control-lever position x Wall thickness Degree: -î rpm : 1350 x Length mm : 6.00x1.50x1000 Rack travel in mm : 15.20...17.80 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. FULL LOAD DELIV. AT FULL LOAD STOP per values 1st version Speed rpm : 1300BEGINNING OF DELIVERY Aneroid pressure h: 1000 Del.quantity : 134.0...139.0) Test pressure, bar: 25...27

cm3 : 5.00Spread 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 112...120 Testina: 1st rack travel in: 10.60 Speed rpm : 1340...1350 2nd rack travel in: 4.00 Speed rpm : 1410...1440 4th rack travel in: 1550 rpm : 0.00...1.00Speed LOW IDLE 1 Control lever position degrees: 82...90 Testing: Speed : 200 rpm Minimum rack trave: 10.00 rpm : 300 Rack travel in mm : 8.60...8.90 CONSTANT REGULATION rpm : 300...450 Speed Aneroid/Altitude Compensator Test 1st version Setting : 500 Speed rom Pressure hPa : -: 10.60...10.90 Rack travel mm Measurement Speed 1/min: 500 1st pressure hPa : 300 Rack travel in m: 11.10...11.30 2nd pressure hPa : 700 Rack travel in m: 11.80...12.00 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version Aneroid pressure h: 1000 rpm : 800 Speed

Del.quantity cm3/: 114.0...118.0 1000 s: (111.0...121.0) Spread cm3 : 8.00 1000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 65.0...67.0 1000 s: (62.0...70.0) Spread cm3 : 8.00 1000 s: (12.0) BREAKAWAY 1st version 1mm rack travel less than

Speed rpm : 1340...1350
STARTING FUEL DELIVERY

full load rack tr: 10.60

Speed rpm : 100 Del.quantity cm3/ : 90.0...110.0 1000 s: (86.0...114.0)

FOM IDFE

Speed rpm : 300
Rack travel in mm : 8.60...8.90
Del.quantity cm3/ : 10.0...16.0
1000 s: (7.0...19.0)
Spread cm3 : 8.00
1000 s: (12.00)

Remarks:

-

**MD9** 

Note remarks

Test sheet : MB 6,0 i 5 Edition : 09.04.91

Replaces

Test oil : ISO-4113

Combination no. : 9 400 087 450

Injection pump

Pump designation : PES6P120A720RS3256

EP type number : 9 400 087 071

Governor

Governor design. : RQV300...1300PA978

Governer no. : 9 420 080 296

Customer-spec. information

Customer : MERCEDES-BENZ

Engine : OM 366 LA

: 126.8 1st version kW Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 025

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 019

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,8

Test lines : 1 680 750 067

Outside diameter x Wall thickness

: 6.00x1.50x1000 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 4.30...4.40 Prestroke mm : (4.25...4.45)

Rack travel in mm: 9.00...12.00

: 6-2-4-1-5-3 Firing order

Phasina : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 6

BASIC SETTING

1st speed rpm: 1300

Rack travel in mm : 11.80...11.90

Del.quantity cm3/: 13.8...14.0

100 s: (13.5...14.3)

Spread cm3 : 0.5

100 c: (0.9)

2nd speed rpm : 300.0 Rack travel in mm : 8.6...8.9 Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.9)

Spread cm3 : 0.8100 s: (1.2)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 300 1st speed

1.20...1.40 travel mm

2nd speed rpm : 800

: 4.50...4.80 travel mm 3rd speed rpm

travel mm

: 1350 : 8.20...8.60

4th speed : 1450 rpm

travel mm : 9.00...10.00

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1350

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1300 Speed Aneroid pressure h: 1000

Del.quantity : 138.0...140.0 1000 : (135.0...143.0)

Spread cm3 : 5.00 1000 : (9.00) RATED SPEED 1st version Control Lever position degrees: 112...120 Testing: 1st rack travel in: 10.80 rpm : 1340...1350 Speed 2nd rack travel in: 4.00 rpm : 1416...1440 Speed 4th rack travel in: 1550 Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever position degrees: 82...90 Testina: Speed rpm : 200 Minimum rack trave: 10.00 rpm : 300 Rack travel in mm: 8.60...8.90 CONSTANT REGULATION rpm : 300...450 Speed Aneroid/Altitude Compensator Test 1st version Settina Speed rpm : 500 hPa : -Pressure Rack travel mm : 10.40...10.70 Measurement 1/min: 500 Speed 1st pressure hPa : 300 Rack travel in m: 10.90...11.10 2nd pressure hPa . 700 Rack travel in m: 11.60...11.80 START CUT-OUT 1/min: 220 (240) Speed FUEL DELIVERY CHARACTERISTICS 1st version

Spread cm3 : 8.001000 s: (12.0) Aneroid pressure h: -Speed rpm : 500 Del.quantity cm3/ : 61.0...63.0 1000 s: (58.0...66.0) Spread cm3 : 8.00 1000 s: (12.0) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 10.80 rpm : 1340...1350 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 90.0...110.0 1000 s: (86.0...114.0) LOW IDLE Speed rpm : 300 Rack travel in mm : 8.60...8.90 Del.quantity cm3/: 10.0...16.0 1000 s: (7.0...19.0) cm3 : 8.00 Spread 1000 s: (12.00) Remarks: 0 4

Speed

Aneroid pressure h: 1000

rpm : 800

Del.quantity cm3/: 118.0...122.0 1000 s: (115.0...125.0)

Note remarks

Test sheet : KHD 12,7 n1 : 19.10.90 Edition Replaces : 7.3.88 Test oil : ISO-4113

Combination no. : 0 400 648 124

Injection pump

Pump designation : PE8A95D410LS2588 EP type number : 0 410 698 989

Governor

Governor design. : RQV300...1150AB1088L

: 0 420 212 115 Governer no.

Customer-spec. information Customer : KHD

Engine : F8L413FW

1st version kW : 136.0 Rated speed : 2300 2nd version kW : 153.0 Rated speed : 2300

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 1.50...1.60 : (1.45...1.65)

Rack travel in mm : 9.00...12.00

: 1-8-7-2-6-5-4-3 Firing order

: 0-45-90-135-180-225-Phasing

270-315

: 0.50 (0.75) Tolerance + - °

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1150

Rack travel in mm : 9.60...9.70

Del.quantity cm3/ : 7.8...8.0

100 s: (7.6...8.2)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.02nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 0.9...1.5

100 s: (0.6...1.7)

cm3 : 0.5Spread 100 s: (0.7)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.10...1.60 travel mm

: 390 2nd speed rpm

: 2.20...2.60 travel mm 3rd speed : 1195 rpm

: 8.70...9.10 travel mm

4th speed : 1245 rpm

: 9.40...9.80 travel mm

GUIDE SLEEVE POSITION

Control-lever position

Degree: -1 rpm : 1170

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1150

: 78.0...80.0 Del.quantity

1000 : (76.0...82.0)

cm3 : 3.50 1000 : (6.00) Torque control curve - 2nd version 1st speed rpm : 1150 Spread 2nd version Rack travel in m: 9.30...9.40 Speed rpm : 1150 Del.quantity cm3/ : 71.0...73.0 rpm : 500 2nd speed Rack travel in m: 10.3...10.4 1000 s: (69.0...75.0) 3rd speed rpm : 935 cm3 : 3.50 1000 s: (6.00) Spread Rack travel in m: 10.0...10.2 4th speed rpm : 1045 Rack travel in m: 9.50...9.70 RATED SPEED START CUT-OUT 1st version Control lever Speed 1/min : 220 (240) position degrees: 117...125 FUEL DELIVERY CHARACTERISTICS Testing: 1st rack travel in: 8.60 rpm : 1190...1200 Speed 1st version 2nd rack travel in: 4.00 rpm : 800 Speed Del.quantity cm3/: 80.5...83.5 1000 s: (78.0...86.0) Speed rpm : 1230...1260 4th rack travel in: 1350 : 100 rpm : 0.00...1.00 Speed rpm Del.quantity cm3/: 65.0...70.0 1000 s: (62.5...72.5) 2nd version Control lever position degrees: 61...69 2nd version rpm : 800 Speed Del.quantity cm3/: 77.5...80.5 1000 s: (75.0...83.0) Testing: 1st rack travel in: 8.30 rpm : 1190...1200 Speed rpmin : 650 2nd rack travel in: 4.00 Del.quantity cm3/: 93.5...96.5 1000 s: (91.0...99.0) Speed rpm : 1230...1260 4th rack travel in: 1350 rpm : 0.00...1.00Speed RACK STOP ADJUSTMENT LOW IDLE 1 Control lever Speed rpm : 500 position degrees: 67...75 **BREAKAWAY** Testing: Speed : 200 1st version rpm Minimum rack trave: 8.40 1mm rack travel less than rpm : 300 Speed Rack travel in mm : 6.40...6.60 full load rack tr: 8.60 Speed rpm : 1190...1200 Speed CONSTANT REGULATION Speed rpm : 300...420 2nd version 1mm rack travel less than TORQUE CONTROL full load rack tr: 8.30 Dimension a mm : 1.00 rpm : 1190...1200 Torque control curve - 1st version rpm : 1150 1st speed STARTING FUEL DELIVERY Rack travel in m: 9.60...9.70 2nd speed rpm : 500 Rack travel in m: 10.30...10.50 Speed rpm : 100 Del.quantity cm3/ : 120.0...130.0 1000 s: (117.0...133.0) Rack travel in mm : 15.40...15.80 3rd speed rpm: 925
Rack travel in m: 10.10...10.30
4th speed rpm: 1030
Rack travel in m: 9.60...9.80

Remarks:

: Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

When accelerating from engine speed "O", no voltage in starting solenoid.

2. Set fuel delivery in fuel-delivery characteristics with stop above the governor housing.

APPLICATION

Below-ground operation

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD 15,8 n1 : 19.10.90 Edition : 25.3.88 Replaces Test oil : ISO-4113 Combination no. : G 400 649 219 Injection pump Pump designation : PE10A95D610/4LS2589 EP type number : 0 410 699 994 Governor Governor design. : PQV300...1150AB1047D Governer no. : 0 420 214 242 Customer-spec. information Customer : F10L413 FW Engine : 170.0 1st version kW : 2300 Rated speed : 177.0 2nd version kW : 2300 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 000 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Openina pressure, bar : 172...175 Test lines : 1 680 750 014 Outside diameter x Wall thickness x Length mm : 6.00X2.00X600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY

: 1.50...1.60 : (1.45...1.65) Rack travel in mm : 9.00...12.00 : 1- 10- 9- 4- 3- 6-5- 8- 7- 2 Firing order : 0-27-72<del>-99-</del>144-171-216-243-288-315 Phasing : 0.50 (0.75) Tolerance + - ° Time to cyl. no. : 1 BASIC SETTING rpm: 1150 1st speed Rack travel in mm : 9.60...9.70 Del.quantity cm3/: 7.5...7.7 100 s: (7.3...7.9) cm3 : 0.3Spread 100 s: (0.6) 2nd speed rpm : 300.0Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 0.9...1.5 100 s: (0.6...1.7) cm3 : 0.5Spread 100 s: (0.7) (B) Setting of injection pump with governor GUIDE SLEEVE TRAVEL rpm : 300 1st speed : 1.10...1.60 travel mm rpm : 390 : 2.20...2.60 2nd speed travel mm 3rd speed : 1195 rpm travel mm : 8.70...9.10 rpm : 1245 4th speed : 9.40...9.80 travel mm GUIDE SLEEVE POSITION Control-lever position Degree: -1 rpm : 1170 Rack travel in mm : 15.20...17.80 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1150 Del.quantity : (3.0...79.0)

Prestroke mm

Test pressure, bar: 25...27

cm3 : 3.50 1000 : (6.00) Torque control curve - 2nd version 1st speed rpm : 1150 Spread Rack travel in m: 9.30...9.40 2nd version 2nd speed rpm: 500
Rack travel in m: 10.3...10.4
3rd speed rpm: 935 Rack travel in m: 10.0...10.2 4th speed rpm : 1045 Rack travel in m: 9.50...9.70 RATED SPEED START CUT-OUT 1st version 1/min: 220 (240) Control lever Speed position degrees: 117...125 FUEL DELIVERY CHARACTERISTICS Testing: 1st rack travel in: 8.60 Speed rpm : 1190...1200 2nd rack travel in: 4.00 1st version Speed rpm : 800 Del.quantity cm3/: 80.5...83.5 1000 s: (78.0...86.0) rpm : 1230...1260 Speed 4th rack travel in: 1350 Speed rpm : 100 rpm : 0.00...1.00Speed Del.quantity cm3/: 65.0...70.0 1000 s: (62.5...72.5) 2nd version Control lever position degrees: 61...69 2nd version Speed rpm : 800 Del.quantity cm3/ : 75.5...78.5 1000 s: (73.0...81.0) Testing: 1st rack travel in: 8.30 Speed rpm : 1190...1200 2nd rack travel in: 4.00 rpmin : 650 Speed Del.quantity cm3/: 93.5...96.5 1000 s: (91.0...99.0) Speed rpm : 1230...1260 4th rack travel in: 1350 rpm : 0.00...1.00Speed RACK STOP ADJUSTMENT LOW IDLE 1 Control lever : 500 Speed rpm position degrees: 67...75 **BREAKAWAY** Testing: Speed 1st version rom Minimum rack trave: 8.40 1mm rack travel less than : 300 rpm Rack travel in mm : 6.40...6.60 full load rack tr: 8.60 rpm : 1190...1200 Speed CONSTANT REGULATION rpm : 300...420 Speed 2nd version 1mm rack travel less than TORQUE CONTROL full load rack tr: 8.30 rpm : 1190...1200 Dimension a mm : 1.00 Speed Torque control curve - 1st version 1st speed rpm : 1150
Rack travel in m: 9.60...9.70
2nd speed rpm : 500
Rack travel in m: 10.60...10.70 STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/ : 120.0...130.0 3rd speed rpm : 880 Rack travel in m: 10.30...10.50 1000 s: (117.0...133.0) : 990 Rack travel in mm : 15.40...15.80 4th speed rpm Rack travel in m: 9.90...10.10

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

When accelerating from engine speed "O", no voltage in starting solenoid.

2. Set fuel delivery in fuel-delivery characteristics with stop above the governor housing.

**APPLICATION** 

Below-ground operation

Note remarks

Test sheet : KHD 15,8 r : 19.10.90 Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 649 246

Injection pump

Pump designation : PE10A95D610/4LS2452

EP type number : 0 410 699 998

Governor

Governor design. : RQV300...1325AB1250L

Governer no. : 0 420 212 224

Customer-spec. information Customer : KHD

Engine : F10L413F

1st version kW : 184.0

: 2650 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

**Opening** 

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm

: (1.95...2.15)

Rack travel in mm: 9.00...12.00

M18

: 1- 10- 9- 4- 3- 6-Firing order

5- 8- 7- 2

: 0-27-72-99-144-171-216-243-288-315 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1325

Rack travel in mm: 8.6C...8.70

Del.quantity cm3/: 7.4...7.6

100 s: (7.2...7.8)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0Rack travel in mm: 6.4...6.6

Del.quantity cm3/: 1.0...1.6

100 s: (0.7...1.8) Spread cm3 : 0.5

100 s: (0.7)

(B) Setting of injection pump

with governor

GUIDE SLEEVE TRAVEL

1st speed rpm : 300

: 1.00...1.40 travel mm

2nd speed rpm : 410

travel mm : 1.90...2.30 : 460

3rd speed rpm

travel mm : 2.30...2.70

: 980 4th speed rpm

5.40...5.80 travel mm

1380 5th speed rpm

: 8.10...8.60 travel mm

GUIDE SLEEVE POSITION Control-lever position

Degree: -1

rpm : 1380 Speed

Rack travel in mm : 15.20...17.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1325 Speed

Del.quantity : 74.0...76.0

1000 : (72.0...78.0)

Spread cm3 : 3.501000 : (6.00) RATED SPEED 1st version

Control Lever position degrees: 114...122

Testing: 1st rack travel in: 7.60 rpm : 1365...1375 Speed 2nd rack travel in: 4.00 rpm : 1425...1455 Speed 4th rack travel in: 1550

Speed rpm : 0.00...1.00 LOW IDLE 1 Control lever

position degrees: 81...89

Testing: Speed rpm : 200 Minimum rack trave: 7.60 rpm : 300 Speed Rack travel in mm : 6.40...6.60

CONSTANT REGULATION rpm : 370...430 Speed

TORQUE CONTROL Dimension a mm : 0.70 Torque control curve - 1st version 1st speed rpm : 1325 Rack travel in m: 8.60...8.70 rpm : 735 2nd speed

Rack travel in m: 9.30...9.40 3rd speed rpm : 885 Rack travel in m: 9.10...9.30 4th speed rpm : 1145

Rack travel in m: 8.80...9.00

START CUT-OUT

1/min: 220 (240) Speed

FUEL DELIVERY CHARACTERISTICS

1st version rpm : 700 Speed Del.quantity cm3/: 64.5...97.5 1000 s: (62.0...100.0)

**BREAKAWAY** 

1st version 1mm rack travel less than full load rack tr: 7.60

rpm : 1365...1375 Speed

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 120.0...130.0 1000 s: (117.0...133.0)

:

Remarks:

M19

Note remarks

: DAF 8,3 i 6 : 24.04.91 Test sheet Edition Replaces : 28.3.91 Test oil : ISO-4113

Combination no. : 0 400 676 182

Injection pump

Pump designation: PE6A90D410RS2524 : 0 410 696 179 EP type number

Governor

Governor design. : RSV250...750A7c2201L

Governer no. : 0 420 232 444

Customer-spec. information Customer : DAF

Engine : DH 825

TEST BENCH REQUIREMENTS

Test oil

: 38...42 inlet temp. °C

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.30...2.40 : (2.25...2.45) Prestroke mm

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4 Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00 Difference ° CS : 4.50...5.50

BASIC SETTING

1st speed rpm: 700

Rack travel in mm : 9.70...9.80

Del.quantity cm3/: 8.3...8.4

100 s: (8.1...8.6)

Spread cm3 : 0.3

100 s: (0.5)

rpm : 250.02nd speed Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 1.9...2.5 100 s: (1.7...2.7)

cm3 : 0.2 Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800 Speed

Rack travel in mm : 0.30...1.00

Governor spring pre-tension Click setting x : 4.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 700

Del.quantity : 83.0...84.0 1000 : (81.0...86.0)

Spread cm3 : 3.00 1000 : (5.00)

RATED SPEED

1st version Control lever

position degrees: 92...100

Testing:

1st rack travel in: 8.70

rpm : 750...755 Speed 2nd rack travel in: 4.00 Speed rpm : 780...795 4th rack travel in: 950

rpm : 0.30...1.40 Speed

LOW IDLE 1 Control lever

position degrees: 74...82

Setting point w/out bumper spring rpm : 250 Speed

Rack travel in mm: 6.4 Speed rpm : 250
Rack travel in mm : 6.30...6.50

Rack travel in mm : 2.00 Speed rpm : 295...355

SET IDLE AUXILIARY SPRING Rack travel in mm : 2.00

## BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 8.70 Speed rpm : 750...755

STARTING FUEL DELIVERY

Speed rpm : 100 Rack travel in mm : 19.50...21.00

LOW IDLE

Speed rpm : 250

Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 19.0...25.0 1000 s: (17.0...27.0)

cm3 : 2.50

Spread 1000 s: (4.50)

Remarks:

APPLICATION

Generator

Note remarks

Test sheet : RAB 9,7 b 1 Edition : 24.04.91 Replaces : 1.3.91 Test oil : ISO-4113

Combination no. : 0 400 846 543

Injection pump

Pump designation : PES6A95D42DLS2595 EP type number : 0 410 896 930

Governor

Governor design. : RQ200/1100AB1210R

Governer no. : 0 420 201 643

Customer-spec. information Customer : RABA

Engine : D2156MT6U

1st version kW : 188.0 : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina

pressure, bar : 172...175

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10 : (1.95...2.05)

Rack travel in mm : 9.00...12.00

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1100

Rack travel in mm : 12.60...12.70

Del.quantity cm3/: 12.6...12.8

100 s: (12.4...13.0)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 200.0 Rack travel in mm : 7.3...7.5 Del.quantity cm3/: 0.9...1.5

100 s: (0.6...1.7)

cm3 : 0.3Spread

100 s: (0.5)

**GUIDE SLEEVE POSITION** Control-lever position

Degree: -2

rpm : 600 Speed

Rack travel in mm : 19.20...20.60

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100 Aneroid pressure h: 700

Del.quantity : 720.3...130.5)

cm3 : 3.00 Spread

1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm Rack travel in mm: 19.9

Testing:

1st rack travel in: 11.60 Speed rpm : 1145...1160

2nd rack travel in: 4.00

rpm : 1190...1220 Speed

M22

LOW IDLE 1

Setting point w/out bumper spring Speed rpm : 200 Rack travel in mm : 6.4

Testing:

Speed rpm : 100 Minimum rack trave: 7.60 rpm

Speed rpm : 200 Rack travel in mm : 6.30...6.50

Rack travel in mm : 2.00 Speed rpm : 320...360

Speed rpm : 450 Maximum rack trave: 1.00

TORQUE CONTROL

Dimension a mm : 0.60

Torque control curve - 1st version

rpm : 1100 1st speed

Rack travel in m: 12.50...12.60

rpm : 500 2nd speed

Rack travel in m: 14.20...14.30

3rd speed rpm : 820

Rack travel in m: 13.70...13.90

4th speed rpm : 995

Rack travel in m: 12.90...13.10

Aneroid/Altitude Compensator Test

1st version Setting

Speed rpm : 500 hPa : 700 Pressure

Rack travel mm : 13.80...13.90

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.20...11.30

2nd pressure hPa : 250

Rack travel in m: 13.10...13.20

3rd pressure hPa : 150

Rack travel in m: 11.60...11.80

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

Speed rpm : 700 Del.quantity cm3/ : 135.0...138.0 1000 s: (133.0...140.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/: 82.5...84.5 1000 s: (80.5...86.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.60

Speed rpm : 1145...1160

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/: 181.0...191.0 1000 s: (178.0...194.0)

Rack travel in mm : 19.50...21.00

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

On activation of the starting solenoid, the start position must be reached.

APPLICATION

**Omnibus** 

Note remarks

: IHC 7,6 m 1 : 01.02.90 Test sheet Edition Replaces : 28.9.89 Test oil : ISO-4113

Combination no. : 0 400 846 569

Injection pump

Pump designation : PES6A95D32ORS2770 EP type number : 0 410 896 905

Governor

Governor design. : RQV350...1350AB1236-

3R

: 0 420 213 112 Governer no.

Customer-spec, information Customer : NAVISTAR

Engine : DT 360

: 127.0 1st version kW : 2700 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 2 417 413 038

Inlet press., bar: 2.80

Test nozzle holder

: 1 688 901 110 assembly

Openina .

: 250...253 pressure, bar

Orifice plate

diameter mm : 0,5

Test lines : 1 680 750 008

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.75...2.85 : (2.70...2.90) Prestroke mm

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no.

BASIC SETTING

1st speed rpm: 1350

Rack travel in mm: 11.40...11.50

Del.quantity cm3/: 7.5...7.7

100 s: (7.3...7.9)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 350.02nd speed Rack travel in mm: 5.7...5.9

Del.quantity cm3/: 1.3...1.7 100 s: (1.0...1.9)

cm3 : 0.3Spread

100 s: (0.5)

(B) Setting of injection pump with governor

GUIDE SLEEVE TRAVEL

rpm : 1350 1st speed

: 7.30...7.50 travel mm

2nd speed rpm : 1460

: 8.10...8.50 travel mm

3rd speed rpm

: 550 : 3.10...3.70 : 350 travel mm

4th speed rpm

: 1.30...1.70 travel mm

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1350 Speed Aneroid pressure h: 900

: 75.0...77.0 Del.quantity

1000 : (73.0...79.0)

: 3.50 Spread cm3

1000 : (6.00)

RATED SPEED

1st version Control Lever

position degrees: 46...54

Testing:

1st rack travel in: 10.40 rpm : 1415...1445 Speed

2nd rack travel in: 4.00

rpm : 1530...1540 Speed

4th rack travel in: 1600

rpm : 0.00...1.00Speed

LOW IDLE 1 Control lever

position degrees: 8...16

Testing:

Speed rpm : 100 Minimum rack trave: 9.00 rpm

Rack travel in mm : 5.70...5.90

CONSTANT REGULATION

Speed rpm : 350...500

Aneroid/Altitude Compensator Test

1st version Setting

rpm Speed : 500 hFa : 900 Pressure

Rack travel mm : 11.40...11.50

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 8.60...8.90

2nd pressure hPa : 240

Rack travel in m: 9.30...9.40

3rd pressure hPa : 480

Rack travel in m: 10.70...11.10

START CUT-OUT

Speed 1/min: 290 (300)

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/ : 52.0...56.0 1000 s: (50.0...58.0)

**BREAKAWAY** 

M25

1st version

1mm rack travel less than

full load rack tr: 10.40

Speed rpm : 1415...1445

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 135.0...155.0 1000 s: (130.0...160.0) Rack travel in mm: 20.00...21.00

LOW IDLE

Speed rpm : 350

Rack travel in mm : 5.70...5.90 Del.quantity cm3/: 13.0...17.0 1000 s: (10.5...19.5)

Spread cm3 : 3.50

1000 s: (5.50)

Remarks:

: NAVISTAR #

: 1811834093

Adjust stop lever to 0.5...1.0 mm

before stop.

Note remarks

: DAF 6,2 p 6 Test sheet Edition : 19.10.90

Replaces

: ISO-4113 Test oil

Combination no. : 0 400 846 581

Injection pump

Pump designation : PES6A95D32ORS2693 EP type number : 0 410 896 914

Governor

Governor design. : RQ300/1300AB1249R

: 0 420 201 648 Governer no.

Customer-spec. information Customer : DAF

: DNTD 620 Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Openina .

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

: 6.00X1.50X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.00...2.10 Prestroke mm : (1.95...2.15)

Rack travel in mm : 7.50...10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00 Difference ° CS : 2.50...3.50

BASIC SETTING

rpm: 850 1st speed

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 6.4...6.5

100 s: (6.2...6.7)

cm3 : 0.3Spread

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 6.3...6.5 Del.quantity cm3/ : 0.7...1.1

100 s: (0.4...1.3)

cm3 : 0.3Spread 100 s: (0.5)

GUIDE SLEEVE POSITION Control-Lever position

Degree: -2 Speed rpm : 800 Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 850 Speed

: 64.5...65.5 Del.quantity 1000 : (62.5...67.5)

cm3 : 3.50 Spread

1000 : (6.00)

RATED SPEED

1st version

Setting point:

: 800 rpm Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.30

rpm : 1335...1350 Speed

2nd rack travel in: 4.00

rpm : 1400...1430 Speed

LOW IDLE 1

Setting point w/out bumper spring

Speed rpm : 300 Rack travel in mm : 6.4

Testing:

rpm : 200 Speed Minimum rack trave: 6.80 Speed rpm : 300

Rack travel in mm : 6.30...6.50

Rack travel in mm : 2.00

Speed rpm : 520...560

TORQUE CONTROL

Dimension a mm : 0.35

Torque control curve - 1st version

1st speed rpm : 1290

Rack travel in m: 10.30...10.40

rpm : 850 2nd speed

Rack travel in m: 11.20...11.40

3rd speed rpm : 970

Rack travel in m: 10.90...11.10

4th speed rpm : 1050

Rack travel in m: 10.40...10.60 5th speed rpm : 1200 Rack travel in m: 10.30...10.50

FUEL DELIVERY CHARACTERISTICS

1st version

rpm : 1290 Speed

Del.quantity cm3/: 69.0...71.0 1000 s: (66.5...73.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.30

Speed rpm : 1535...1350

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 130.0...145.0

1000 s: (127.0...148.0)

Rack travel in mm : 19.50...21.00

LOW IDLE

: 300 rpm -

Rack travel in mm : 6.30...6.50

Del.quantity cm3/ : 7.0...11.0

1000 s: (4.5...13.5)

cm3 : 3.50Spread

1000 s: (5.50)

Remarks:

APPLICATION

Omnibus

Note remarks

Test sheet : DAF 6,2 s Edition : 24.04.91 Replaces : 23.11.90 Test oil : ISO-4113

Combination no. : 0 400 846 582

Injection pump

Pump designation : PES6A95D32ORS2796 EP type number : 0 410 896 901

Governor

Governor design. : R0300/1300AB1253-2R

: 0 420 201 653 Governer no.

Customer-spec. information Customer : DAF

Engine : NS 156G

1st version kW : 156.0 Rated speed : 2600

TEST BENCH REQUIREMENTS

Test oil

inlet temp. 'C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

**Opening** 

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 7.50...10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00

Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 12.80...12.90

Del.quantity cm3/: 8.4...8.5

100 s: (8.2...8.7)

Spread cm3 : 0.3

100 s: (0.6)

rpm : 390.0 2nd speed Rack travel in mm: 6.4...6.6 Del.quantity cm3/: 0.6...1.0

100 s: (0.3...1.2)

Spread cm3 : 0.3100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 800 Speed

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Spread

Speed rpm : 850 Aneroid pressure h: 1000

Del.quantity : 84.5...85.5 1000 : (82.5...87.5)

cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version

Setting point: Speed rpm : 800 Rack travel in mm: 20.0

M28

Testing: 1st rack travel in: 11.60 Speed rpm : 1330...1340 2nd rack travel in: 4.00 Speed rpm : 1410...1440 4th rack travel in: 1550 rpm : 0.00...1.00Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm : 6.5 Testina: Speed rpm : 100 Minimum rack trave: 7.70 rpm : 300 Speed Rack travel in mm : 6.48...6.60 Rack travel in mm : 2.00 rom : 545...585 Speed TORQUE CONTROL Dimension a mm : 0.60 Torque control curve - 1st version 1st speed rpm : 1290
Rack travel in m: 12.60...12.70
2nd speed rpm : 750
Rack travel in m: 14.20...14.80 rpm : 960 3rd speed Rack travel in m: 13.50...14.10 rpm : 1055 4th speed Rack travel in m: 12.90...13.30 Aneroid/Altitude Compensator Test 1st version Setting Speed rpm : 600 hPa : 1000 Pressure : 12.80...12.90 Rack travel mm Measurement Speed 1/min: 600 1st pressure hPa : -Rack travel in m: 10.80...11.00 2nd pressure hPa : 260 Rack travel in m: 12.30...12.40 3rd pressure hPa : 210 Rack travel in m: 11.30...11.50 START CUT-OUT 1/min: 220 (240) Leed 2 FUEL DELIVERY CHARACTERISTICS

STARTING FUEL DELIVERY

Speed rpm : 100 Rack travel in mm : 14.90...15.00

LOW IDLE

Speed rpm : 300
Rack travel in mm : 6.40...6.60
Del.quantity cm3/ : 6.0...10.0
1000 s: (3.5...12.5)
Spread cm3 : 3.50
1000 s: (5.50)

:

Remarks:

NO1

Note remarks

Test sheet : DAF 6,2 p 7 Edition : 24.04.91

Replaces

Test oil : ISO-4113

Combination no. . 0 400 846 583

Injection pump

Pump designation : PES6A95D32ORS2693

EP type number : 0 410 896 914

Governor

Governor design. : RQ300/1300AB1253R

Governer no. : 0 420 201 649

Customer-spec. information

Customer : DAF

: NS 156 Engine

1st version kW : 156.0

: 2600 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

**Opening** 

: 172...175 pressure, har

Test lines : 1 680 750 015

Outside diameter x Wall thickness

: 6.00x1.50x600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm: 7.50...10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-69-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50

& maximum rack tra: 21.00

Difference \* CS : 2.50...3.50

BASIC SETTING

rpm : 10001st speed

Rack travel in mm : 12.00...12.10

Del.quantity cm3/: 8.7...8.8

100 s: (8.5...9.0)

cm3 : 0.3Spread

100 s: (0.6)

rpm : 300.0 2nd speed

Rack travel in mm: 6.3...6.5 Del.quantity cm3/: 0.6...1.0

100 s: (0.3...1.2)

cm3 : 0.3 Spread

100 s: (0.5)

GUIDE SLEEVE POSITION

Control-Lever position

Degree: -2

rpm : 1000

Rack travel in mm : 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1000 Speed

Aneroid pressure h: 700

: 87.5...88.5 1000 : (85.5...90.5) Del.quantity

: 3.50 cm3 Spread

1000 : (6.00)

RATED SPEED

1st version

Setting point:

: 1000 Speed rpm : 1000 Rack travel in mm : 20.0

**NO2** 

Testing: 1st rack travel in: 11.00 Speed rpm: 1335...1350 2nd rack travel in: 4.00 rpm : 1430...1460 Speed LOW IDLE 1 Setting point w/out bumper spring rom Rack travel in mm: 6.4 Testing: Speed rpm : 100 Minimum rack trave: 7.70 rpm : 300 Speed Rack travel in mm : 6.40...6.50 Rack travel in mm: 2.00 : 540...580 Speed rom TORQUE CONTROL Dimension a mm : -Torque control curve - 1st version 1st speed rpm : 1280
Rack travel in m: 12.30...12.40
2nd speed rpm : 1000
Rack travel in m: 12.30...12.50 Aneroid/Altitude Compensator Test 1st version Setting rpm : 600 hPa : 700 Speed rom Pressure Rack travel mm : 12.00...12.10 Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 10.30...10.50
2nd pressure hPa : 290
Rack travel in m: 11.50...11.60
3rd pressure hPa : 250
Rack travel in m: 10.70...10.90 START CUT-OUT 1/min : 28 - - 3) Speed FUEL DELIVERY CHARACTERISTICS 1st version

BREAKAWAY 1st version

1mm rack travel less than

full load rack tr: 11.00 Speed rpm : 1335...1350

STARTING FUEL DELIVERY

Speed rpm : 100 Rack travel in mm : 12.50...12.60

LOW IDLE

Speed rpm : 300 Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 6.0...10.0 1000 s: (3.5...12.5) Spread cm3 : 3.50 1000 s: (5.50)

Remarks:

NO3

Aneroid pressure h: -Speed rpm: 600

Del.quantity cm3/: 53.5...54.5 1000 s: (51.5...56.5)

Note remarks

Test sheet : DAF 6,2 p 4
Edition : 24.04.91
Replaces : 19.3.91
Test oil : ISO-4113

Combination no. : 0 400 846 585

Injection pump

Pump designation : PES6A95D32ORS2693 EP type number : 0 410 896 914

Governor

Governor design. : RQ300/1300AB1253-1R

Governer no. : 0 420 201 650

Customer—spec. information Customer : DAF

Engine : NS 133

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

Opening |

pressure, bar : 172...175

Test lines : 1 680 750 015

Outside diameter x Wall thickness

x Length mm : 6.00X1.50X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10

: (1.95...2.15) Rack travel in mm : 7.50...10.50

Firing order : 1-5- 3- 6- 2- 4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 11.50...11.60

Del.quantity cm3/: 7.6...7.7

100 s: (7.4...7.9)

Spread cm3 : 0.3

100 s: (0.6)

2nd speed rpm : 300.0 Rack travel in mm : 6.3...6.5 Del.quantity cm3/: 0.6...1.0

100 s: (0.3...1.2)

Spread cm3 : 0.3 100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2 rpm : 800

Speed rpm: 800 Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 850 Aneroid pressure h: 700

Del.quantity : 76.5...77.5 1000 : (74.5...79.5)

cm3 : 3.50

1000 : (6.00)

RATED SPEED

Spread

1st version

Setting point:

Speed rpm : 800 Rack travel in mm : 20.0

Testing:

1st rack travel in: 9.50

Speed rpm : 1340...1350 2nd rack travel in: 4.00 Speed rpm : 1410...1440 4th rack travel in: 1550 Speed rpm : 0.00...1.00LOW IDLE 1 Setting point w/out bumper spring Speed nom : 300 Rack travel in mm: 6.4 Testing: Speed rpm : 100 Minimum rack trave: 7.70 rpm : 300 Rack travel in mm : 6.30...6.50 Rack travel in mm : 2.00 rom : 525...565 Speed TORQUE CONTROL Dimension a mm : 0.55 Tarque control curve - 1st version 1st speed rpm : 1290 Rack travel in m: 10.50...10.60 rpm : 800 2nd speed Rack travel in m: 11.80...12.40 3rd speed rpm : 950 Rack travel in m: 11.20...11.80 4th speed rpm : 1050 Rack travel in m: 10.70...11.10 Aneroid/Altitude Compensator Test 1st version Setting : 600 Speed rpm hPa : 700 Pressure : 11.50...11.60 Rack travel mm Measurement 1/min: 600 Speed 1st pressure hPa : -Rack travel in m: 10.10...10.30 2nd pressure hPa : 160 Rack travel in m: 10.70...10.80 START CUT-OUT Speed 1/min: 220 (240) FUEL DELIVERY CHARACTERISTICS

Del.quantity cm3/: 73.0...75.0 1000 s: (70.5...77.5) Aneroid pressure h: rpm : 600 Speed Del.quantity cm3/: 50.5...51.5 1000 s: (48.5...53.5) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.50 Speed rpm : 1340...1350 STARTING FUEL DELIVERY rpm : 100 Speed Rack travel in mm : 12.40...12.50 LOW IDLE rpm : 300 Speed Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 6.0...10.0 1000 s: (3.5...12.5) cm3 : 3.50Spread 1000 s: (5.50) Remarks:

1st version

Aneroid pressure h: 700 Speed rpm : 1290

#### Note remarks

Test sheet : DAF 6,2 p 5
Edition : 24.04.91
Replaces : 28.9.90
Test oil : ISO-4113

Combination no. : 0 400 846 586

Injection pump

Pump designation : PES6A95D32ORS2693 EP type number : 0 410 896 914

Governor

Governor design. : R9300/1300AB1254R

Governer no. : 0 420 201 651

Customer—spec. information Customer : DAF

Engine : NT 119

1st version kW : 119.0 Rated speed : 2600

## TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

assembly : 0 681 343 009

**Opening** 

pressure, bar : 172...175

Test Lines : 1 680 750 015

Outside diameter

x Wall thickness

x Length mm : 6.00x1.50x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.00...2.10

: (1.95...2.15)

Rack travel in mm : 7.50...10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

## BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 8.50...9.50 & maximum rack tra: 21.00 Difference ° CS : 2.50...3.50

BASIC SETTING

1st speed rpm: 850

Rack travel in mm : 10.80...10.90

Del.quantity cm3/: 6.1...6.2

100 s: (5.9...6.4)

Spread cm3: 0.3

100 s: (0.6)

2nd speed rpm : 300.0

Rack travel in mm : 6.3.. 6.5 Del.quantity cm3/: 0.6...1.0

100 s: (0.3...1.2)

Spread cm3: 0.3

100 s: (0.5)

GUIDE SLEEVE POSITION Control-lever position

Degree: -2

Speed rpm: 850 Rack travel in mm: 19.20...20.80

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 850

Del.quantity : 61.5...62.5

1000 : (59.5...64.5)

Spread cm3 : 3.50 1000 : (6.00)

RATED SPEED

1st version

Setting point:

Speed rpm: 850 Rack travel in mm: 20.0

N06

Testina: 1st rack travel in: 9.30 Speed rpm : 1340...1350 2nd rack travel in: 4.00 rpm : 1410...1440 Speed LOW IDLE 1 Setting point w/out bumper spring Speed rpm : 300 Rack travel in mm: 6.4 Testing: rpm : 100 Speed Minimum rack trave: 7.70 Speed rpm : 300 Rack travel in mm : 6.30...6.50 Rack travel in mm : 2.00 rom : 525...565 Speed TORQUE CONTROL Dimension a mm : 0.35 Torque control curve - 1st version 1st speed rpm : 1290 Rack travel in m: 10.30...10.40 2nd speed rpm : 850 Rack travel in m: 11.10...11.40 3rd speed rpm : 975
Rack travel in m: 10.70...11.00
4th speed rpm : 1025 Rack travel in m: 10.50...10.70 FUEL DELIVERY CHARACTERISTICS 1st version rpm : 1290 Speed Del.quantity cm3/: 68.0...70.0 1000 s: (65.5...72.5) BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 9.30 rpm : 1340...1350 Speed STARTING FUEL DELIVERY rpm : 100 Rack travel in mm : 10.90...11.00 LOW IDLE rpm : 300 Speed Rack travel in mm : 6.30...6.50 Del.quantity cm3/: 6.0...10.0 1000 s: (3.5...12.5)

Spread cm3 : 3.50 1000 s: (5.50)

APPLICATION

**Omnibus** 

**NO7** 

Note remarks

: MWM 2,1 c 1 : 16.01.91 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 862 001

Injection pump

Pump designation : PES2A90D320/3RS2794

EP type number : 0 410 892 001

Governor

Governor design. : RSV325...1500A2C505-

2R

: 0 420 233 196 Governer no.

Customer-spec. information Customer : MWM

: D226B-2 Engine

1st version kW : 30.0 : 3000 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening.

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter

x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.95...3.05 Prestroke mm

: (2.90...3.10)

Rack travel in mm : 9.00...12.00

Firing order : 1-2

Phasina : 0-90

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

BEGINNING OF DELIVERY DIFFERENCE

betw. rack trav. m: 9.00...0.00

& maximum rack tra: 21.00 Difference ° CS : 3.50...4.50

BASIC SETTING

rpm: 1500 1st speed

Rack travel in mm : 11.20...11.30

Del.quantity cm3/: 9.2...9.3

100 s: (9.0...9.5)

cm3 : 0.3Spread

100 s: (0.5)

2nd speed rpm : 325.0 Rack travel in mm : 7.0...7.2

Del.quantity cm3/: 0.8...1.4

100 s: (0.6...1.6) cm3 : 0.2

Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension

Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1500

: 92.0...93.0 Del.quantity 1000 : (90.0...95.0)

: 3.00

cm3 Spread

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 105...113

Testina: 1st rack travel in: 10.20 rpm : 1540...1550 Sheed 2nd rack travel in: 4.00 rpm : 1585...1615 Spe ed 3rd rack travel in: 4.00 rpm : 1605...1635 Sr.eed 4th rack travel in: 1770 rpm : 0.30...1.40 Speed LOW IDLE 1 Control lever position degrees: 67...75 Setting point w/out bumper spring Speed rpm : 325 Rack travel in mm: 6.6 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 325
Rack travel in mm : 7.00...7.20 Rack travel in mm : 2.00 : 440...500 Speed rpm TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1500 Rack travel in m: 11.20...11.30 2nd speed rpm : 500 Rack travel in m: 11.20...11.40 BREAKAWAY 1st version 1mm rack travel less than full load rack tr: 10.20 rpm : 1540...1550 Speed STARTING FUEL DELIVERY Speed rpm : 100 Del.quantity cm3/: 130.0...140.0 1000 s: (127.0...143.0) Rack travel in mm: 19.50...21.00 Remarks: :

# APPLICATION

Tractor (tractor engines)

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : (3HD 4,1 k : 16.01.91 Edition Replaces : 28.9.90 Test oil : ISO-4113 Combination no. : 0 400 864 082 Injection pump Pump designation : PES4A85B410/3RS2799 EP type number : 0 410 884 944 Governor Governor design. : RS325/1250A0C2254L Governer no. : 0 420 220 011 Customer-spec. information Customer : KHD Engine : BF4L913 1st version kW : 78.0 Rated speed : 2500 TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 000 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly Opening . pressure, bar : 172...175 Test lines : 1 680 750 014 Outside diameter x Wall thickness : 6.00x2.00x600 x Length mm (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values \_\_\_\_ BEGINNING OF DELIVERY Test pressure, bar: 25...27 : 2.50...2.60 : (2.45...2.65) Prestroke mm

Firing order : 1-3-4-2 Phasing : 0-90-180-270 Tolerance + - ° : 0.50 (0.75) BASIC SETTING 1st speed rpm: 1250 Rack travel in mm : 11.40...11.50 Del.quantity cm3/: 8.4...8.5 100 s: (8.2...8.7) cm3 : 0.3Spread 100 s: (0.5) 2nd speed rpm : 325.0 Rack travel in mm : 7.2...7.4 Del.quantity cm3/ : 1.0...1.6 100 s: (0.8...1.8) Spread cm3 : 0.2100 s: (0.4) GUIDE SLEEVE POSITION Control-lever position Degree: -3 rpm : 800 Speed Rack travel in mm : 0.30...0.70 FULL LOAD DELIV. AT FULL LOAD STOP 1st version rpm : 1250 Speed Aneroid pressure h: 700 : 84.5...85.5 Del.quantity 1000 : (82.5...87.5) Spread cm3 : 3.00 1000 : (5.00) RATED SPEED 1st version Control lever position degrees: 81...89 Testing: 1st rack travel in: 10.40 Speed rpm : 1290...1300 2nd rack travel in: 4.00 Speed rpm : 1355...1385 4th rack travel in: 1450 rpm : 0.30...1.40Speed LOW IDLE 1

N10

Rack travel in mm : 9.00...12.00

Control lever

position degrees: ?

Setting point w/out bumper spring

Speed rpm : 325 Rack travel in mm : 6.0

Testing:

rpm : 100 Speed Minimum rack trave: 19.50 Speed rpm: 325 Rack travel in mm: 5.90...6.10

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1250

Rack travel in m: 11.40...11.50

2nd speed rpm : 500

Rack travel in m: 11.80...11.90

4th speed rpm : 890

Rack travel in m: 11.60...11.80

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 rpm hPa : 700 Pressure

: 11.80...11.90 Rack travel mm

Measurement

 $1/\min : 500$ Speed

1st pressure hPa : -

Rack travel in m: 10.70...10.80

2nd pressure hPa : 275

Rack travel in m: 11.40...11.50 3rd pressure hPa : 185

Rack travel in m: 10.90...11.10

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700

rpm : 800 Speed

Del.quantity cm3/: 83.5...85.5 1000 s: (81.0...88.0)

Aneroid pressure h: -

Speed rpm : 500 Del.quantity cm3/: 59.0...61.0

1000 s: (57.0...63.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.40

Speed rpm : 1290...1300

STARTING FUEL DELIVERY

Speed rpa

Del.quantity cm3/: 110.0...120.0 1000 s: (107.0...123.0)

Remarks:

Check electrically unlatched starting

fuel delivery (EES) with 24 volt.

**APPLICATION** 

**Omnibus** 

M11

#### Note remarks

Test sheet : KHD 4,1 k 2 Edition : 24.04.91 : 19.3.91 Replaces Test oil : ISO-4113

Combination no. : 0 400 864 089

Injection pump

Pump designation : PES4A85D410/3RS2799

EP type number : 0 410 884 944

Governor

: RSV325...1075A8C2253 Governor design.

-3L

: 0 420 232 547 Governer no.

Customer-spec, information Customer : KHD

: BF4I 913 Engine

: 70.0 1st version kW Rated speed : 2150

#### TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...62

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 2.50...2.60 Prestroke mm

: (2.45...2.65)

Rack travel in mm : 9.00...12.00 Firing order : 1-3-4-2

Phasing : 0-90-180-270

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

1st speed rpm: 1075

Rack travel in mm : 11.90...12.00

Del.quantity cm3/: 7.9...8.0

100 s: (7.7...8.2)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed npm : 325.0Rack travel in mm: 8.2...8.4 Del.quantity cm3/: 1.2...1.8

100 s: (1.0...2.0)

cm3 : 0.2 Spread

100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

rpm : 800 Speed Rack travel in mm: 0.30. 0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1075 Aneroid pressure h: 1000

Del.quantity : 79.5...80.5 1000 : (77.5...82.5)

: 3.00 Spread cm3

1000 : (5.00)

## RATED SPEED

1st version Control lever

position degrees: 95...103

Testing:

1st rack travel in: 10.90

Speed rpm : 1115...1125

2nd rack travel in: 4.00

rpm : 1150...1180 Speed

4th rack travel in: 1315

Speed rpm : 0.30...1.70

LOW IDLE 1 Control Lever

position degrees: 64...72 Setting point w/out bumper spring

rpm Rack travel in mm: 8.3

Testing:

rpm : 100 Speed Minimum rack trave: 19.50 rpm : 325 Speed

Rack travel in mm : 8.20...8.40

Rack travel in mm: 2.00 rpm : 350...410 Speed

TORQUE CONTROL

Torque control curve - 1st version

rpm : 1075 1st speed

Rack travel in m: 11.90...12.00

rpm : 500 2nd speed

Rack travel in m: 12.40...12.50

4th speed rpm : 860

Rack travel in m: 12.20...12.40

Aneroid/Altitude Compensator Test

1st version

Setting

Speed : 500 והמיז hPa : 1000 Pressure

Rack travel mm : 12.40...12.50

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.40...11.50

2nd pressure hPa : 330 Rack travel in m: 12.00...12.10

3rd pressure hPa : 250

Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 1000

Speed rpm : 750 Del.quantity cm3/ : 79.5...81.5 1000 s: (77.0...84.0)

Aneroid pressure h: -

rpm : 500 Speed

Del.quantity cm3/ : 57.0...59.0

1000 s: (55.0...61.0)

**BREAKAWAY** 

1st version

1mm rack travel less than

full load rack tr: 10.90

rpm : 1115...1125 Speed

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 115.0...125.0 1000 s: (112.0...128.0) Rack travel in mm: 18.00...18.40

Remarks:

Check electrically unlatched starting fuel delivery (EES) with 24 volt.

Note remarks

Test sheet : KHD 6,1 r 3 : 24.04.91 Edition Replaces : 1.3.91 Test oil : ISO-4113

: 0 400 866 137 Combination no.

Injection pump

Pump designation : PES6A85D410/3RS2761 EP type number : 0 410 886 895

Governor

: RSV325...1400A2C2205 Governor design.

-1L

: 0 420 232 520 Governer no.

Customer-spec. information Customer : KHD

Engine : BF6L913

1st version kW : 118.0 : 2800 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

pressure, bar : 172...175

Test Lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

Prestroke mm : 2.50...2.60 : (2.45...2.65)

Rack travel in mm : 9.00...12.00

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance + - ° : 0.50 (0.75)

BASIC SETTING

rpm: 1250 1st speed

Rack travel in mm : 12.30...12.40

Del.quantity cm3/: 8.7...8.8

100 s: (8.5...9.0)

Spread cm3 : 0.3

100 s: (0.5)

2nd speed rpm : 325.0 Rack travel in mm : 7.5...7.7

Del.quantity cm3/: 0.8...1.4

100 s: (0.6...1.6) cm3 : 0.2

Spread 100 s: (0.4)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Speed Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : 4.25

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed Aneroid pressure h: 700

Del.quantity

: 87.5...88.5 1000 : (85.5...90.5) cm3 : 3.00

Spread

1000 : (5.00)

RATED SPEED

1st version

Control lever

position degrees: 97...105

Testing:

1st rack travel in: 11.30

rpm : 1290...1300 Speed

2nd rack travel in: 4.00

rpm : 1345...1375 Speed

**N14** 

3rd rack travel in: 4.00

Speed rpm : 1360...1390 4th rack travel in: 1525

Speed rpm : 0.30...1.40

LOW IDLE 1 Control Lever

position degrees: 65...73

Setting point w/out bumper spring

rpm : 325 Speed Rack travel in mm: 7.1

Testina:

Speed rpm : 100 Minimum rack trave: 19.50

Speed rpm : 325 Rack travel in mm : 7.50...7.70

Rack travel in mm : 2.00

Speed rpm : 440...500

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 1250
Rack travel in m: 12.30...12.40
2nd speed rpm : 750
Rack travel in m: 12.30...

Rack travel in m: 12.80...12.90

3rd speed rpm : 940

Rack travel in m: 12.50...12.70

Aneroid/Altitude Compensator Test

1st version

Setting

Speed uch. : 500 Pressure hPa : 700

Rack travel mm : 12.80...12.90

Measurement

1/min: 500 Speed

1st pressure hPa : -

Rack travel in m: 11.50...11.60

2nd pressure hPa : 530 Rack travel in m: 12.60...12.70

3rd pressure hPa : 330

Rack travel in m: 11.70...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: 700 Speed : 750 nom

Del.quantity cm3/: 88.5...90.5

1000 s: (86.0...93.0)

Aneroid pressure h: -: 500 Speed rpm

Del.quantity cm3/: 62.5...63.5 1000 s: (60.5...65.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.30

rpm : 1290...1300 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 110.0...120.0 1000 s: (107.0...123.0)

Rack travel in mm : 17.00...17.40

Remarks:

**APPLICATION** 

Wheel loader

Excavator

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : CUM 8,3 p : 13.05.91 Edition : 10.4.91 Replaces Test oil : ISO-4113 Combination no. : 0 400 866 153 Injection pump Pump designation : PES6A100D320/3RS2763 EP type number : 0 410 806 006 Governor : RSV400...950A0C2238-Governor design. 1R : 0 420 233 255 Governer no. Customer-spec. information : C.D.C. Customer : 6CT 8.3 Engine : 145.0 1st version kW Rated speed : 1900 TEST BENCH REQUIREMENTS

Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 047 Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

: 1 680 750 014 Test lines

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values

BEGINNING OF DELIVERY Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

rpm: 950 1st speed

Rack travel in mm : 12.10...12.20

Del.quantity cm3/: 12.0...12.2

100 s: (11.8...12.4)

Spread cm3 : 0.4

100 s: (0.6)

rpm : 400.0 2nd speed Rack travel in mm: 4.8...5.0 Del.quantity cm3/: 1.3...1.7

100 s: (1.1...1.9)

Spread cm3 : 0.6100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 2.50

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 950 Speed Aneroid pressure h: 900

Del.quantity : 120.3...124.5)

: 4.00 cm3

Spread 1000 : (6.50)

RATED SPEED

1st version Control lever

position degrees: 36...44

N16

Testing:

1st rack travel in: 11.10

rpm : 990...1000 Speed

2nd rack travel in: 4.00

rpm : 1065...1075 Speed

3rd rack travel in: 4.00

rpm : 1075...1105 Speed

4th rack travel in: 1150

rom : 0.30...1.40 Speed

LOW IDLF 1 Control Lever

position degrees: 17...25

Setting point w/out bumper spring

Speed rpm : 400

Rack travel in mm: 4.4

Testing:

rpm : 100 Speed

Minimum rack trave: 19.00 rpm : 400

Rack travel in mm : 4.80...5.00

Aneroid/Altitude

Compensator Test

1st version

Setting

Speed : 500 rpm Pressure hPa : 900

: 12.10...12.20 Rack travel mm

Measurement

Speed 1/min: 500

1st pressure hPa : -

Rack travel in m: 10.60...10.80

2nd pressure hPa : 220

Rack travel in m: 11.10. 11.20

3rd pressure hPa : 305

Rack travel in m: 11.50...11.90

FUEL DELIVERY CHARACTERISTICS

1st version

Aneroid pressure h: -

Speed rpm: 500
Del.quantity cm3/: 89.5...93.5
1000 s: (87.5...95.5)

BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 11.10

rpm : 990...1000 Speed

N17

STARTING FUEL DELIVERY

Speed rpm : 100

Del.quantity cm3/: 150.0...170.0 1000 s: (145.0...175.0)

Rack travel in mm : 19.00...21.00

LOW IDLE

Speed rpm : 400
Rack travel in mm : 4.80...5.00
Del.quantity cm3/ : 13.0...17.0
1000 s: (11.0...19.0)

Spread cm3 : 6.00

1000 s: (8.00)

Remarks:

: C.D.C. # 3917577

Adjust stop lever to 0.5...1.0 mm

before stop.

St 't-of-delivery mark at 10° cam rotation angle after start of delivery,

cylinder 1

BOSCH INJ. PUMP TEST SPECIFICATIONS Note remarks Test sheet : KHD 6,1 W Edition : 24.04.91 Replaces : ISO-4113 Test oil Combination no. : 0 400 866 169 Injection pump Pump designation : PES6A85D410/3RS2611 EP type number : 0 410 886 902 Governor Governor design. : RSV325...1250A2C540-: 0 420 232 565 Governer no. Customer-spec. information Customer : KHD : F6L913 Engine 1st version kW : 89.0 : 2500 Rated speed TEST BENCH REQUIREMENTS Test oil inlet temp. °C : 38...42 Overflow valve : 1 417 413 000 Inlet press., bar: 1.50 Test nozzle holder : 0 681 343 009 assembly **Opening** : 172...175 pressure, bar : 1 680 750 014 Test Lines Outside diameter x Wall thickness x Length mm : 6.00x2.00x600 (A) Injection pump setting values Insp. values in parentheses Set equal delivery quant. per values BEGINNING OF DELIVERY Test pressure, bar: 25...27

> : 2.50...2.60 : (2.45...2.65)

Rack travel in mm : 9.00...12.00 Firing order : 1-5-3-6-2-4 : 0-60-120-180-240-300 Phasing Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ BASIC SETTING rpm: 1250 1st speed Rack travel in mm : 10.50...10.60 Del.quantity cm3/: 6.2...6.3 100 s: (6.0...6.5) cm3 : 0.3Spread 100 s: (0.5) cm3 : 0.2Spread 100 s: (0.4) GUIDE SLEEVE POSITION Control-lever position Degree: -3 Speed rpm: 800 Rack travel in mm: 0.30...0.70 Governor spring pre-tension Click setting x : 5.50 FULL LOAD DELIV. AT FULL LOAD STOP 1st version Speed rpm : 1250 Del.quantity : 62.5...63.5 1000 : (60.5...65.5) : 3.00 Spread cm3 1000 : (5.00) RATED SPEED 1st version Control lever position degrees: 98...106 Testing: 1st rack travel in: 9.50 rpm : 1290...1300 Speed 2nd rack travel in: 4.00 Speed rpm : 1350...1380 4th rack travel in: 1525

Prestroke mm

Speed rom : 0.30...1.40LOW IDLE 1 Control Lever position degrees: 70...78 Setting point w/out bumper spring Speed rpm : 325 Rack travel in mm : 7.0 Testing: Speed rpm : 100 Minimum rack trave: 19.50 Speed rpm : 325 Rack travel in mm: 6.90...7.10 Rack travel in mm : 2.00 : 410...470 Speed rom TORQUE CONTROL Torque control curve - 1st version 1st speed rpm : 1250 Rack travel in m: 10.50...10.60

2nd speed rpm : 500

Rack travel in m: 11.10...11.20

4th speed rpm : 1000 Rack travel in m: 10.70...10.90 FUEL DELIVERY CHARACTERISTICS 1st version : 800 Speed rpm Del.quantity cm3/: 54.0...56.0 1000 s: (51.5...58.5) cm3 : 2.50 Spread 1000 s: (4.50) **BREAKAWAY** 1st version 1mm rack travel less than full load rack tr: 9.50 rpm : 1290...1300 Speed STARTING FUEL DELIVERY rpm : 100 Del.quantity cm3/: 115.0...125.0 1000 s: (112.0...128.0) Rack travel in mm: 17.60...18.00 Remarks: **APPLICATION** 

Wheel loader

N19

Note remarks

: CUM 8,3 a92 Test sheet : 13.05.91 Edition

Replaces

Test oil : ISO-4113

: 0 400 866 170 Combination no.

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 925

Governor

: RSV400...1100ADC2190 Governor design.

-52R

Governer no. : 0 420 233 278

Customer-spec. information Customer : C.D.C.

: 6 CTA 8.3ltr Engine

: 174.5 1st version kW : 2200 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter

x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values \_\_\_

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm : 10.50

: 1-5-3-6-2-4 Firing order

: 0-60-120-180-240-300 Phasing

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

rpm: 1100 1st speed

Rack travel in mm : 12.70...12.80

Del.quantity cm3/: 12.7...12.9

100 s: (12.5...13.1)

Spread cm3 : 0.4

100 s: (0.6)

rpm : 400.0 2nd speed

Rack travel in mm : 5.8...6.0 Del.quantity cm3/: 1.7...2.1 100 s: (1.5...2.3)

cm3 : 0.6Spread 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x :?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm : 1100

: 127.0...129.0 Del.quantity 1000 : (125.0...131.0)

cm3 : 4.00 Spread

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 39...47

Testing:

N20

1st rack travel in: 11.70

rpm : 1140...1150 Speed

2nd rack travel in: 4.00

rpm : 1210...1220 Speed

3rd rack travel in: 4.00

rpm : 1210...1240 Speed

4th rack travel in: 1300

rpm : 0.30...1.40 Speed

LOW IDLE 1

Control lever

position degrees: 17...25 Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 5.4

Testing:

Speed : 100 rom Minimum rack trave: 19.00 : 400 rpm

Rack travel in mm : 5.80...6.00

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 11.70

Speed rpm : 1140...1150

STARTING FUEL DELIVERY

Speed rpm : 100 Del.quantity cm3/ : 155.0...175.0 1000 s: (150.0...180.0)

Rack travel in mm : 16.20...16.40

LOW IDLE

Speed rpm : 400 Rack travel in mm : 5.80...6.00 Del.quantity cm3/ : 17.0...21.0 1000 s: (15.0...23.0)

cm3 : 6.00

Spread 1000 s: (8.00)

Remarks:

: C.D.C. # 3917456

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Note remarks

Test sheet : CUM 8,3 a93 Edition : 13.05.91

Replaces :

Test oil : ISO-4113

Combination no. : 0 400 866 171

Injection pump

Pump designation : PES6A1000320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1050A0C2190

-54R

Governer no. : 0 420 233 285

Customer—spec. information Customer : C.D.C

Engine : 6 CT 8.3

1st version kW : 154.4 Rated speed : 2100

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

assembly : 1 688 901 101

Openina |

pressure, bar : 207...210

Orifice plate

diameter mm : 0,6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00x2.00x600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

Prestroke mm : 2.80...2.90 : (2.75...2.95)

Rack travel in mm : 10.50

Firing order : 1-5-3-6-2-4

Phasing : 0-60-120-180-240-300

Tolerance  $+ - ^{\circ} : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 1050

Rack travel in mm : 12.40...12.50

Del.quantity cm3/: 12.5...12.7

100 s: (12.3...12.9)

Spread cm3 : 0.4

100 s: (0.6)

2nd speed rpm : 400.0 Rack travel in mm : 5.8...6.0 Del.quantity cm3/ : 1.5...1.9

100 s: (1.3...2.1)

Spread cm3 : 0.6 100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

Speed rpm: 1050

Del.quantity : 125.5...127.5 1000 : (123.5...129.5)

Spread cm3 : 4.00 1000 : (6.50)

RATED SPEED

1st version Control lever

position degrees: 38...46

Testing:

N22

1st rack travel in: 11.40

rpm : 1090...1100 Speed

2nd rack travel in: 4.00

rpm : 1130...1160 Speed 3rd rack travel in: 4.00

rpm : 1135...1165 Speed

4th rack travel in: 1275

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 19...27

Setting point w/out bumper spring

rpm : 400 Rack travel in mm: 5.4

Testing:

Speed : 100 rpm Minimum rack trave: 19.00 Speed : 400 meri

Rack travel in mm : 5.80...6.00

## BREAKAWAY

1st version 1mm rack travel less than

full load rack tr: 11.40

Speed rpm : 1090...1100

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 145.0...165.0

1000 s: (140.0...170.0)

Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 400
Rack travel in mm : 5.80...6.00
Del.quantity cm3/ : 15.5...19.5
1000 s: (13.5...21.5)

Spread cm3 : 6.001000 s: (8.00)

Remarks:

: C.D.C. # 3919768

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark at 10° cam rotation angle after start of delivery, cylinder 1

Note remarks

: CUM 8,3 a94 : 13.05.91 Test sheet Edition

Replaces

Test oil : ISO-4113

Combination no. : 0 400 866 172

Injection pump

Pump designation : PES6A100D320/3RS2691

EP type number : 9 410 230 025

Governor

Governor design. : RSV400...1250A0C2190

-55R

: 0 420 233 286 Governer no.

Customer-spec. information Customer : C.D.C.

: 6 CTA 8.3 Engine

: 131.0 1st version kW : 2500 Rated speed

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 047

Inlet press., bar: 1.50

Test nozzle holder

: 1 688 901 101 assembly

Opening

: 207...210 pressure, bar

Orifice plate

diameter mm : 0.6

Test lines : 1 680 750 014

Outside diameter x Wall thickness

: 6.00X2.00X600 x Length mm

(A) Injection pump setting values Insp. values in parentheses

Set equal delivery quant. per values

BEGINNING OF DELIVERY

Test pressure, bar: 27...29

: 2.80...2.90 : (2.75...2.95) Prestroke mm

Rack travel in mm: 10.50

: 1-5-3-6-2-4 Firina order

Phasing : 0-60-120-180-240-300

Tolerance + - ° : 0.50 (0.75)

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm : 1250

Rack travel in mm : 10.90...11.00

Del.guantity cm3/: 10.3...10.5

100 s: (10.1...10.7)

Spread cm3 : 0.4

100 s: (0.6)

rpm : 400.0 2nd speed

Rack travel in mm : 5.3...5.5 Del.quantity cm3/ : 1.2...1.6

100 s: (1.0...1.8)

cm3 : 0.6 Spread

100 s: (0.8)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3 rpm : 800

Rack travel in mm : 0.30...0.70

Governor spring pre-tension

Click setting x : ?

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 1250 Speed

: 103.5...105.5 : (101.5...107.5) Del.quantity 1000

cm3 : 4.00

Spread

1000 : (6.50)

RATED SPEED

1st version

Control lever

position degrees: 51...59

Testing:

N24

1st rack travel in: 9.90

rpm : 1290...1300 Speed

2nd rack travel in: 4.00

rpm : 1360...1390 Speed

4th rack travel in: 1450

Speed rpm : 0.30...1.40

LOW IDLE 1 Control lever

position degrees: 26...34

Setting point w/out bumper spring

Speed rpm : 400 Rack travel in mm: 4.9

Testing:

Speed : 100 rpm Minimum rack trave: 19.00 : 400 Speed rom

Rack travel in mm : 5.30...5.50

## BREAKAWAY

1st version

1mm rack travel less than

full load rack tr: 9.90

rpm : 1290...1300 Speed

## STARTING FUEL DELIVERY

: 100 Speed COM

Del.quantity cm3/: 145.0...165.0 1000 s: (140.0...170.0)

Rack travel in mm : 19.00...21.00

## LOW IDLE

Speed rpm : 400 Rack travel in mm : 5.30...5.50 Del.quantity cm3/: 12.5...16.5

1000 s: (10.5...18.5)

cm3 : 6.00Spread

1000 s: (8.00)

#### Remarks:

: C.D.C # 3920811

Adjust stop lever to 0.5...1.0 mm before stop.

Start-of-delivery mark 11° cam angle after start of delivery cyl. 1

Note remarks

: KHD 3,0 g : 24.04.91 Test sheet Edition : 19.3.90 Replaces : ISO-4113 Test oil

: 0 400 873 038 Combination no.

Injection pump

Pump designation : PES3A80D410RS2790 EP type number : 0 410 883 011

Governor

Governor design. : RSV325...900A7C602-1

: 0 420 232 388 Governer no.

Customer-spec. information Customer : KHD

: F3L912/W Engine

TEST BENCH REQUIREMENTS

Test oil

inlet temp. °C : 38...42

Overflow valve

: 1 417 413 000

Inlet press., bar: 1.50

Test nozzle holder

: 0 681 343 009 assembly

Opening

: 172...175 pressure, bar

Test lines : 1 680 750 014

Outside diameter x Wall thickness

x Length mm : 6.00X2.00X600

(A) Injection pump setting values Insp. values in parentheses Set equal delivery quant.

per values

BEGINNING OF DELIVERY

Test pressure, bar: 25...27

: 1.90...2.00 Prestroke mm : (1.85...2.05) Rack travel in mm : 9.00...12.00

Firing order : 1- 3- 2

: 0-120-240 Phasing

Tolerance  $+ - \circ : 0.50 (0.75)$ 

Time to cyl. no. : 1

BASIC SETTING

1st speed rpm: 900

Rack travel in mm: 10.50...10.60

Del.quantity cm3/: 5.1...5.2

100 s: (5.0...5.4)

cm3 : 0.2Spread

100 s: (0.4)

2nd speed rpm : 325.0 Rack travel in mm : 7.6...7.8 Del.quantity cm3/: 0.7...1.3

100 s: (0.5...1.4)

Spread cm3 : 0.2

100 s: (0.3)

GUIDE SLEEVE POSITION Control-lever position

Degree: -3

Speed rpm: 800 Rack travel in mm: 0.30...0.70

Governor spring pre-tension Click setting x : 4.00

FULL LOAD DELIV. AT FULL LOAD STOP

1st version

rpm : 900 Speed

: 51.5...52.5 Del.quantity

1000 : (50.0...54.0) cm3 : 2.50

Spread

1000 : (4.00)

RATED SPEED

1st version

Control lever

position degrees: 99...107

Testina:

1st rack travel in: 9.50 rpm : 940...950 Speed 2nd rack travel in: 4.00

rpm : 955...985 Speed

LOW IDLE 1

Control Lever

position degrees: 67...75

Setting point w/out bumper spring

Speed rpm : 325 Rack travel in mm : 6.0

Testing:

rpm : 100 Speed Minimum rack trave: 19.50
Speed rpm : 325
Rack travel in mm : 5.90...6.10
Rack travel in mm : 2.00
Speed rpm : 320...380

SET IDLE AUXILIARY SPRING Rack travel in mm: 2.00

TORQUE CONTROL

Torque control curve - 1st version

1st speed rpm : 900

Rack travel in m: 10.50. .10.60 2nd speed rpm : 500 Rack travel in m: 10.50...10.70

FUEL DELIVERY CHARACTERISTICS

1st version

Speed rpm : 500 Del.quantity cm3/ : 46.5...48.5 1000 s: (44.5...50.5)

**BREAKAWAY** 

1st version 1mm rack travel less than

full load rack tr: 9.50

rpm : 940...950 Speed

STARTING FUEL DELIVERY

rpm : 100 Speed

Del.quantity cm3/: 125.0...135.0

1000 s: (122.0...138.0)

Rack travel in mm : 19.50...21.00

Remarks: